TM02/TU16

CONTROL LOGIC TEST
CZTUCF0

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IDENTIFICATION

PRODUCT CODE:	AC-9455F-MC
PRODUCT NAME:	CZTUCF0 TM02/TU16 CTRL LGC
DATE CREATED:	21 APRIL 76
MAINTAINER:	DIAGNOSTIC ENGINEERING
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REVISED:	11 NOV 1977 BY CLEM WALSH

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1. ABSTRACT

THIS PROGRAM IS DESIGNED TO SEQUENTIALLY TEST ALL
CONTROL LOGIC AND DATA FORMATTING WITHIN THE TM02
FORMATTER. EACH TEST WILL ATTEMPT TO ISOLATE FAILURES
TO THE MODULE LEVEL AND PROVIDE PRINTOUT INFORMATION
WHICH WILL IDENTIFY THE FAILING MODULE.
THERE ARE TWO (2) MAJOR AREAS OF TESTING: CONTROL LOGIC
AND DATA FORMATTING. THE CONTROL LOGIC SECTION (TEST 1-41 & 57-64)
WILL TEST ALL ERROR AND STATUS CONDITIONS AS WELL AS
ADDRESSING PROTOCOL AND OPERATIONAL LOGIC SEQUENCES.
THE DATA FORMATTING SECTION (TESTS 42-56) WILL TEST
ALL DATA FORMATS AND TRANSFER PATHS IN ALL POSSIBLE
COMBINATIONS.
THE LEVEL OF FAULT ISOLATION IS POSSIBLE BECAUSE OF
TM02 THE STRUCTURE AND ITS MAINTAINENCE MODES.

2. REQUIREMENTS (HARDWARE)

A. ANY PDP-11 PROCESSOR - WITH OR WITHOUT A HARDWARE SWITCH REGISTER
B. 8K OF CORE
C. CONSOLE TTY
D. TM02 MAGTAPE CONTROLLER
E. MASSBUS CONTROLLER (RH)
F. TU16 MAGTAPE TRANSPORT

3. LOADING PROCEDURE

USE STANDARD PROCEDURE FOR LOADING BINARY PAPER TAPE.

4. STARTING PROCEDURE

THERE ARE TWO (2) STARTING ADDRESSES THAT MAY BE USED:
200(8) AND 210(8).

A. 200(8): STARTING AT THIS ADDRESS WILL CAUSE A PROGRAM
        IDENTIFICATION HEADER TO BE PRINTED BEFORE TESTING
        IS BEGUN.

B 210(8): STARTING AT THIS ADDRESS WILL NOT PRINT THE
        IDENTIFICATION HEADER AND IS THEREFORE GENERALLY
        TO BE USED FOR RESTARTS RATHER THAN INITIAL START

***IF THE SOFTWARE SWITCH REGISTER IS USED THEN THE FOLLOWING MESSAGE
   WILL BE TYPED FIRST ; SWR=XXXXXX NEW= THIS WILL ALLOW THE LOADING OF
   THE SOFTWARE SWITCH REGISTER LOC. 176 BEFORE THE TESTING IS STARTED.

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115                                   (REFER TO SECTION 5 FOR OPERATOR OPTION)
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5. CONSOLE SWITCH SETTINGS

IF THE DIAGNOSTIC IS RUN ON A CPU WITHOUT A SWITCH REGISTER THEN A SOFTWARE SWITCH REGISTER IS USED WHICH ALLOWS THE USER THE SAME SWITCH OPTIONS AS THE HARDWARE SWITCH REGISTER. IF THE HARDWARE SWITCH REGISTER DOES NOT EXIST OR IF ONE DOES AND IT CONTAINS ALL ONES (177777) THEN THE SOFTWARE SWITCH REGISTER (LOC. 176) IS USED.

CONTROL:

THIS PROGRAM ALSO SUPPORTS THE DYNAMIC LOADING OF THE SOFTWARE SWITCH REGISTER (LOC. 176) FROM THE TTY. THIS CAN BE ACCOMPLISHED BY DOING THE FOLLOWING:

1) TYPE CONTROL G < G>; THIS WILL ALLOW THE TTY TO ENTER DATA INTO LOC. 176 AT SELECTED POINTS WITHIN THE PROGRAM.

2) THE MACHINE WILL THEN TYPE: SWR=XXXXXXNEW= (XXXXXX IS THE OCTAL CONTENTS OF THE SOFTWARE SWITCH REGISTER.)

3) AFTER THE ''NEW='' HAS BEEN TYPED THEN THE OPERATOR CAN DO ONE OF THE FOLLOWING AT THE TTY:

   A) TYPE A NUMBER TO BE LOADED INTO LOC. 176 FOLLOWED BY A <CR>. (ONLY NUMBERS BETWEEN 0-7 WILL BE ACCEPTED AND ONLY 6 NUMBERS WILL BE ALLOWED)
   IF A <CR> IS THE FIRST KEY DEPRESSED THE SOFTWARE SWITCH REGISTER CONTENTS WILL NOT BE CHANGED.

   B) IF A CONTROL U < U> IS DEPRESSED THEN THE PROGRAM WILL SEND YOU BACK TO STEP 2.

```
                        ALL SWITCHES ARE USED (0-15) AND THE NORMAL, OR DEFAULT, RUN
                        IS DONE WITH ALL SWITCHES SET TO ZERO (0).
                        ALL SWITCHES ARE DYNAMIC AND MAY BE CHANGED AT ANY TIME.

                        ***BUT, THE SOFTWARE SWITCH REGISTER CAN ONLY BE  LOADED DYNAMICALLY
                           AS STATED ABOVE UNDER CONTROL HEADING.
                        SW15(100000):    1=HALT ON ERROR
                                         0=CONTINUE
                        SW14(040000):    1=LOOP ON ERROR (SCOPE)
                                         0=CONTINUE
                        SW13(020000):    1=DO NOT PRINT ERRORS
                                         0=PRINT ALL ERRORS
                        SW12(010000):    1=INHIBIT ITERATIONS
                                         0=ITERATE EACH TEST ITS ASSIGNED AMOUNT
                        SW11(004000):    1=DO CONTINUOUS CYCLE
                                         0=HALT AT END OF PASS
                        SW10(002000):    1=HALT AT END OF CURRENT TEST
                                         0=CONTINUE TO NEXT TEST
                        SW9(001000):     1=DO MANUAL ITERVENTION TESTS
                                         0=INHIBIT MANUAL INTERVENTION
                        SW8(000400):     1=INHIBIT WRAP AROUND DATA CHECK
                                         0=DO DATA CHECKS
                        SW7(000200):     1=INHIBIT WRAP AROUND STATUS CHECK
                                         0=DO STATUS CHECK
                        SW6(000100):     1=SELECTABLE WRAP DATA PATTERN (IN SINGLE TEST)
                                         0=AUTO PATTERN
                        SW5-0:           SELECT INDIVIDUAL TEST (1-64)** 00=DO ALL TESTS
```

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6. ERROR PRINTOUTS

ERROR PRINTOUTS WILL APPEAR IN TWO FORMS, ONE FOR THE
CONTROL LOGIC TESTS AND ANOTHER FOR THE DATA TESTS.

CONTROL LOGIC PRINTOUTS WILL CONTAIN A HEADER WHICH CALLS
OUT THE TEST NUMBER, FUNCTION BEING TESTED, AND THE SUSPECT MODULE,
OR MODULES ON THE FIRST LINE. THE SECOND LINE WILL CONTAIN INFORMATION
AS TO THE ACTUAL ERROR. BOTH THE EXPECTED RESULT AND THE ACTUAL
RESULT OF THE TEST WILL BE GIVEN. LINE THREE WILL SHOW THE
CONTENTS OF THE MAJOR REGISTERS AT THE TIME OF THE ERROR AND
LINE FOUR WILL PRINT THE ITERATION NUMBER WHEN APPLICABLE.

DATA TESTS WILL PRINT A HEADER CONTAINING THE TEST NUMBER,
AND A DESCRIPTION OF THE WRAP AROUND FUNCTION UNDER TEST.
FOLLOWING THE HEADER WILL BE A LIST OF THE MAJOR REGISTERS
WITH THE EXPECTED AND ACTUAL VALUES. ANY BAD DATA WILL BE
PRINTED (PER CHARACTER) FOLLOWING THE REGISTER INFORMATION OR
FOLLOWING THE HEADER IF NO STATUS ERRORS WERE ENCOUNTERED.

EXAMPLES:

1. THE FOLLOWING EXAMPLE SHOWS A TYPICAL ERROR
   PRINTOUT FOR THE ADDRESS TESTS (LT1-LT3).

```
LOGIC TEST 1: DRIVE ADDRESSING (M8909 OR RH)
NON-EXIST DRIVE 3 EXPT-NOT RECVD
ITER: 3
```

THIS PRINTOUT SHOWS THAT THE DRIVE ADDRESS (CS2 BITS 2,1,0)
RESULTED IN THE DETECTION OF NED (BIT 12 OF CS2) FOR DRIVE
THREE (3) WHEN THAT DRIVE SHOULD BE THERE. THIS ERROR OCCURRED
ON ITERATION THREE (3).

2. THIS EXAMPLE WILL SHOW A TYPICAL PRINTOUT OF ONE OF THE REGISTER
   BIT TESTS.

```
LOGIC TEST 7: FC BIT TEST (M8705)
FC BITS 15-0 EXPT 177777 RECVD 177577
```

THIS PRINTOUT SHOWS THAT FRAME COUNT BIT SEVEN (7) WAS
NOT SET WHEN IT SHOULD HAVE BEEN. NO ITERATION NUMBER
IS DISPLAYED WHEN RUNNING WITH CONSOLE SWITCH
TWELVE (12) SET TO A ONE (1)

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                                        (PAGE 4)

                                3.  THE FOLLOWING IS A TYPICAL PRINTOUT RESULTING FROM BAD
                                    STATUS DETECTION DURING A MANUAL INTERVENTION TEST (LT14-LT17)

                                LOGIC TEST 15:  MANUAL STATUS TEST 2
                                BAD STATUS EXPT 100700 RCVD 000700
                                ITER:  0

                                        THIS SHOWS THAT ON THE FIRST TRY (ITER: 0) THE ACTION TAKEN
                                        BY THE OPERATOR DID NOT RESULT IN THE PROPER STATUS DETECTION
                                        BY THE HARDWARE (ATA IS NOT SET).

                                4.  THE FOLLOWING FOUR (4) EXAMPLES SHOW EACH OF THE ERROR TYPES THAT
                                    CAN BE DETECTED BY ANY OF THE ERROR FORCING TESTS.  NOTE THAT ONE OR
                                    MORE OF THE ERROR TYPES COULD BE DETECTED ON A SINGLE EXECUTION OF
                                    THE TEST.

                                LOGIC TEST 24:  DPAR (M8906 RH)
                                DPAR EXPT EXPT-NOT RCVD
                                CS1     WC      BA      FC      CS2     DS      ER      AS      MR      TC
                                004260 000000 033726 000000 000100 010600 000000 000000 177712 140300

                                        THIS MESSAGE SHOWS THAT DPAR (BIT 5 OF ER) DID NOT SET.

                                LOGIC TEST 26:  FCE (M8909)
                                ERR NOT SET
                                CS1     WC      BA      FC      CS2     DS      ER      AS      MR      TC
                                004260 000000 001376 000000 000100 110600 001000 000001 000000 100300

                                        THIS MESSAGE SHOWS THAT WHILE FCE (BIT 9 OF ER) WAS INDEED
                                        SET, THE COMPOSITE ERROR BIT (BIT 14 OF DS) WAS NOT.
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                                        (PAGE 5)

LOGIC TEST 30:  DTE (M8906 RH)
UNEXPTECTED ERROR BITS
CS1     WC      BA      FC      CS2     DS      ER      AS      MR      TC
144260 002006 006600 000000 001300 150600 030000 000001 000017 100300

        THIS MESSAGE SHOWS THAT WHILE THE PROPER ERROR BIT (DTE:  BIT 12 OF ER) I
        SET, OPI (BIT 13 OF ER) IS ALSO SET AND SHOULD NOT BE.

LOGIC TEST 32:  UNS (M8909)
NOT RESET BY DRIVE CLEAR

CS1     WC      BA      FC      CS2     DS      ER      AS      MR      TC
144210 002006 006600 000000 001300 150000 040000 000001 000000 140307

        THIS MESSAGE SHOWS THAT WHILE THE PROPER ERROR BITS WERE SET, THEY
        WERE NOT CLEARED BY A DRIVE CLEAR OPERATION.
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                                (PAGE 6)

5.  THE FOLOWING ARE TWO EXAMPLES OF ERRORS DETECTED BY THE WRAP AROUND
    DATA TESTS.  NOTE THAT EACH WRAP AROUND TEST MAY BE ACCOMPANIED
    BY EITHER A STATUS ERROR OF A DATA ERROR OR BOTH.

LOGIC TEST 42: WRAP 3, NRZ, NORMAL, ODD
BAD STATUS
CS1 EXPT 004270 RCVD 144270
CS2 EXPT 000100 RCVD 000100
DS  EXPT 010600 RCVD 150600
ER  EXPT 000000 RCVD 000100

        THIS MESSAGE INDICATES BAD STATUS OF VPE (BIT 6 OF ER)

LOGIC TEST 44: WRAP 2, NRZ, NORMAL, ODD
BAD DATA
CN: 0
G:  11111111
B:  11111011
CN: 10
G:  00000000
B:  00001000

        THIS MESSAGE SHOWS THAT DATA RECEIVED WAS NOT AS EXPECTED.  CHARACTER
        ZERO (CN: 0) SHOWS THAT BIT TWO (2) WAS DROPPED, WHILE CHARACTER
        TEN (CN: 10) SHOWS BIT THREE (3) HAS BEEN PICKED UP
        G:  = EXPECTED DATA (GOOD)
        B:  = ACTUAL DATA (BAD)
```

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7. OPERATION

THE PROCEDURES FOR OPERATING THIS PROGRAM ARE QUITE
SIMPLE AND REQUIRE ONLY A FEW STEPS:

1. LOAD ADDRESS 200 OR 210
2. SET SWITCHES FOR DESIRED TEST CYCLE

   ***REFER TO SECTION 5 FOR DYNAMIC LOADING
   OF SOFTWARE SWITCH REGISTER. ***

3. PRESS START

ALL CONSOLE SWITCHES ARE DYNAMIC AND MAY BE CHANGED
AT ANY TIME. THE NORMAL OPERATING SEQUENCE IS ALL SWITCHES
DOWN (0). THE TEST WILL TAKE APPROXIMATELY 3 MINUTES TO
RUN; HOWEVER, IF ITERATIONS ARE INHIBITED (SW12=1) THE TEST
WILL RUN IN ABOUT 30 SECONDS. THE END OF PASS IS
NOTED BY A PRINTOUT STATING END OF PASS, AND THE NUMBER OF
THAT PASS.
***FOR THE DYNAMIC LOADING OF THE SOFTWARE SWITCH REGISTER
   REFER TO SECTION 5.****

SINGLE TEST SELECTION: (SW0-SW5)

WHEN SW0-SW5 ARE SET TO ZERO (00), THE SCHEDULAR WILL
EXECUTE ALL TESTS (1-64) IN SEQUENCE. IF SW0-SW5 ARE SET
TO SOME SPECIFIC TEST NUMBER (1-64) THEN THAT PARTICULAR TEST
ONLY WILL BE EXECUTED UNTIL THE TEST SELECT NUMBER IS CHANGED.
WHEN YOU WISH TO SELECT A PARTICULAR TEST, SET SW10 TO
A ONE (1) IN ORDER TO STOP AT THE END OF THE CURRENT TEST BEFORE
SELECTING A DIFFERENT TEST NUMBER. YOU MAY SELECT THAT NUMBER IN
ANY DIRECTION (HIGHER OR LOWER) BECAUSE EACH TEST IS SELF CONTAINED.

WRAP AROUND DATA PATTERNS MAY BE SELECTED VIA SW6 WHEN IN
SINGLE TEST MODE. A TELETYPE REQUEST IS MADE FOR THE DESIRED DATA
PATTERN WHENEVER SWITCH TEN (SW10) AND SWITCH SIX (SW6) ARE SET TO
A ONE (1) WHILE ONE OF THE WRAP TESTS IS SELECTED IN SW0-SW5.

PROGRAM HALTS***

***IF THE SOFTWARE SWITCH REGISTER IS USED AND THE PROGRAM
   HALTS THEN THE OPERATOR CAN PRESS A < G> CONTROL G BEFORE HITTING
   CONTINUE. THIS WILL ALLOW THE OPERATOR TO ENTER DATA INTO
   LOC. 176 (SWREG). THE FOLLOWING MESSAGE WILL BE TYPED OUT ;
   SWR=XXXXXX NEW= (REFER TO SECTION 5 FOR OPERATOR OPTIONS).

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8. TEST DESCRIPTION

LOGIC TEST #1: DRIVE ADDRESSING

PURPOSE: VERIFY THE PRESENCE OF TM02 AT THE ADDRESSES SPECIFIED BY THE OPERATOR. TEST OCCURS IMMEDIATELY AFTER DRIVE SELECTION.

PROGRAMMED SEQUENCE: FOR EACH TM02 ADDRESS (0-7) THE C1 REGISTER IS READ, AND THE NON-EXISTANT DRIVE (NED) BIT IS CHECKED. NED IS SET WHEN THE TM02 DOES NOT RESPOND TO DEM BY ISSUING TRA. IN THIS TEST, NED IS EXPECTED FOR EACH ADDRESS NOT TYPED BY THE OPERATOR.

LIKELY FAULT LOCATIONS: M5904, CABLE, M5903, M8909

CIRCUITS	PRINT REFERENCES
RH-DS BITS	(CSRB)
RH-NED BIT	(CSRB)
MASSBUS CABLE C(DEM, TRA, DS BITS)	(MB3)
DRIVE ADDRESS	(MB12)
DEM-TRA HANDSHAKE	

LOGIC TEST #2: REGISTER ADDRESSING

PURPOSE: CHECK THE REGISTER SELECT LINES

PROGRAMMED SEQUENCE: READ ALL 14 MASSBUS REGISTERS WHICH MAKE UP THE TAPE SYSTEM CHECKING FOR (1) CONTROL BUS PARITY ERROR AND (2) ILR BIT

LIKELY FAULT LOCATIONS: M5904, CABLE, M5903, M8909, M8905, M8903

CIRCUITS	PRINT REFERENCE
C-LINES	(MB1, 2, 3), (MB13), (MB14), (MB15)
RH REGISTER SELECT	(BCTA)
TM02 REGISTER SELECT	(MB12)
MASSBUS REGISTER SELECT LINES	(MB1, 2)
PARITY TREE	(MB14)
CPAR, ILR BITS	(MB111)

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LOGIC TEST #3: CONTROL BUS

PURPOSE: VERIFY THAT ALL CONTROL LINES PROPERLY TRANSMIT ONES AND ZEROS.

PROGRAMMED SEQUENCE: WRITE FC REGISTER AND CHECK CPAR, READ FC AND CHECK MCPE, UPDATE DATA, REPEAT. DATA IS ALL 0'S, WALKING '1' BIT, ALL '0'S, 2 WALKING '1' BITS BEGINNING WITH BIT 0 AND 8 DATA IS CHECKED ALONG WITH ERROR BITS.

LIKELY FAULT LOCATIONS: M5904, CABLES, M5903YA, M8909, M8905, M8903

CIRCUITS	PRINT REFERENCE
C-LINES	(MB1,2,3)
C-BUS MULTIPLEXERS	(MB13,4,5,8)(TCCM7)(MR)
ERROR BIT	(MB111)
MCPE BIT	(PACA)

LOGIC TEST #4: SLAVE ADDRESSING

PURPOSE: VERIFY THE FUNCTIONING OF THE SLAVE ADDRESS BITS IN THE TAPE CONTROL REGISTER THE SLAVE ADDRESS BUS LINES, THE ADDRESS DECODE CIRCUIT IN THE TU16 AND THE SPR BIT.

****
IT IS REQUIRED THAT ONLY ONE SLAVE BE POWERED UP WHEN
*THIS TEST IS RUN. *
****

PROGRAMMED SEQUENCE: THE SLAVE ADDRESS BITS IN THE TAPE CONTROL REGISTER ARE LOADED WITH ALL 8 COMBINATIONS AND SPR IS CHECKED FOR EACH ADDRESS.

LIKELY FAULTS LOCATIONS: M8905, M8907, CABLE, M9001, M8910, M9001YA, M8903

CIRCUITS	PRINT REFERENCE
REGISTER SELECT	(MB12)
SLAVE ADDRESS BITS	(MR6)
SLAVE ADDRESS LINES	(M8907,2-2), (LAW6)
TU16 ADDRESS DECODE	(LAW6)
SPR BIT	(LAW6)(M9001YA)(TCCM7)

LOGIC TEST #5: MAINTENANCE REGISTER BITS

PURPOSE: TO VERIFY THAT THE VARIOUS BITS OF THE MAINTENANCE REGISTER CAN BE WRITTEN INTO AND READ AND OTHERWISE BEHAVE AS EXPECTED.

PROGRAMMED SEQUENCE: IN THE FIRST SEQUENCE AN INCREMENTING DATA WORD (0-37) IS WRITTEN INTO THE MR. WITH THE CONTENTS OF BITS 0-4 BEING CHECKED AFTER EACH OPERATION. THEN 15(OCTAL) IS WRITTEN INTO THE REGISTER WHICH SHOULD PERMIT BITS 7-15 TO BE WRITTEN FROM THE CONTROL BUS. THEN THE DATA WRITTEN INTO BITS 7-15 IS INCREMENTED AND CHECKED.

LIKELY FAULT LOCATIONS: M8905

CIRCUITS	PRINT REFERENCE
C-LINES	
MAINTENANCE REGISTER	(MR2,3,5)
M.R. FUNCTION DECODE	(MR5)
M.R. MULTIPLEXOR	(MR4)

LOGIC TEST #6: TAPE CONTROL REGISTER BITS

PURPOSE: TO VERIFY THAT TAPE CONTROL BITS 0-11 CAN BE WRITTEN INTO AND READ AND THAT TCW BEHAVES AS EXPECTED:

PROGRAMMED SEQUENCE: ALL 0'S DATA PATTERN IS WRITTEN TO AND READ FROM THE TAPE CONTROL REGISTER. TCW IS CHECKED FOR A "ONE". THIS SEQUENCE IS REPEATED WITH ALL "1" DATA AND AGAIN WITH ALL "0"'S.

LIKELY FAULT LOCATIONS: M8909,M8905

CURCUITS	PRINT REFERENCE
TM02 REGISTER SELECT	(MB12)
TC FLIP-FLOPS, MULTIPLEXERS	(MR6)

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LOGIC TEST #7: FRAME COUNT BIT TEST

PURPOSE: TO VERIFY THAT THE FRAME COUNT BITS CAN BE WRITTEN INTO AND READ FROM AND ARE NEITHER STUCK AT 0 NOR STUCK AT 1.

PROGRAMMED SEQUENCE: DATA IS WRITTEN INTO THE FRAME COUNT REGISTER AND READ FROM IT. THE DATA PATTERN IS ALL ZEROS FOLLOWED BY ALL ONES FOLLOWED BY ALL ZEROS.

LIKELY FAULT LOCATIONS: M8909

CIRCUITS	PRINT REFERENCE
TM02 REGISTER SELECT	(MB12)
FRAME COUNT REGISTER	(MB18)
FRAME COUNT MULTIPLEXERS	(MB110)

LOGIC TEST #10: FUNCTION CODE BIT TEST

PURPOSE: TO VERIFY THAT THE FUNCTION CODE BITS CAN BE WRITTEN INTO AND READ FROM AND ARE NEITHER STUCK AT 0 NOR STUCK AT 1.

PROGRAMMED SEQUENCE: THE C1 REGISTER IS WRITTEN WITH ALL ZEROS. DATA IS CHECKED ON THE 5 FUNCTION CODE BITS (BITS 1-5). BITS 1-5 ARE WRITTEN WITH ONES, CHECK AND REPEAT WITH ALL ZEROS.

LIKELY FAULT LOCATION: M8909, M8905

CIRCUITS	PRINT REFERENCE
TM02 REGISTER SELECTION	(MB12)
FUNCTION CODE FLOPS	(MB15)
FUNCTION CODE MULTIPLEXERS	(MR6)

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LOGIC TEST #11: GO BIT SET, RESET

PURPOSE: TO VERIFY THAT THE GO BIT CAN BE SET IN A SIMULATED READ OPERATION AND CLEARED WITH AN INIT.

PROGRAMMED SEQUENCE: INIT AND CHECK THAT GO=0. SET UP A SIMULATED READ OPERATION BY LOADING A WAM3 15(OCTAL) INTO THE MAINTENANCE REGISTER, CLEARING THE FRAME COUNT REGISTER TO SET FCS, LOAD 1700 (FORMAT) INTO THE TAPE CONTROL REGISTER, SETTING READ COMMAND AND GO BIT. CHECK FOR GO=1. INIT AND CHECK THAT GO BIT=0.

LIKELY FAULT LOCATION: MASSBUS CABLE B(INIT), M8909, M8905

CIRCUIT	PRINT REFERENCE
FCS	MB18
SET ILF	MB17
SET NEF	MB17
GO BIT	MB15
GO BIT MULTIPLEXER	MR6
SET ILR	MB12

LOGIC TEST #12: DRIVE READY BIT

TEST 12 IS AN EXACT REPEAT OF TEST 11 EXCEPT THAT DRIVE READY (DRY) IS CHECKED INSTEAD OF THE GO BIT. DRY IS SIMPLY GO L MULTIPLEXED ONTO THE C-LINES AS BIT SEVEN OF THE STATUS REGISTER.

PRINT REF TCCM7

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LOGIC TEST #13: INTERRUPT TEST

PURPOSE: TO VERIFY THE OPERATION OF THE RH INTERRUPT LOGIC.

PROGRAMMED SEQUENCE: THE C1 REGISTER IS CLEARED, PRIORITY IS SET, THE INTERRUPT ENABLE BIT IS SET AND THE INTERRUPT IS AWAITED.

LIKELY FAULT LOCATION:

CIRCUITS	PRINT REFERENCE
INTERRUPT CONTROL	BCTF

MANUAL INTERVENTION TESTS 14,15,16,17

LOGIC TEST #14· STATUS AT BOT, ON LINE, LOADED, NO WRITE RING

PURPOSE: TO TEST FOR THE PRESENCE OF MOL,WRL,DPR,DRY,BOT.

PROGRAMMED SEQUENCE: THE OPERATOR IS INSTRUCTED TO LOAD THE DRIVE WITH A TAPE MINUS THE WRITE ENABLE RING AND PLACE THE DRIVE ON LINE AT BOT MOL,WRL,DPR,DRY,BOT ARE CHECKED.

LIKELY FAULT LOCATION: M8910, SLAVE CABLE, M8903

CIRCUIT	PRINT REFERENCE
MOL	LAW6, TCCM7, M8908, M9001YA, YC
WRL	LAW8, TCCM7, M8908, M9001YA, YC
DPR	TCCM7
DRY	TCCM7
BOT	LAW6, TCCM7, M8908YA, M8913, YA

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LOGIC TEST #15: STATUS AT BOT, OFFLINE, LOADED, NO WRITE RING

PURPOSE: TO TEST ATA, DPR, DRY, SSC

PROGRAMMED SEQUENCE: OPERATOR IS INSTRUCTED TO TAKE DRIVE OFFLINE: ATA, SSC, DPR, DRY ARE CHECKED.

LIKELY FAULT LOCATION: M8910, M8903, M8909, SLAVE CABLE

CIRCUIT	PRINT REFERENCE
SSC	LAW8, M8913, M8913YA, TCCM7
ATA	MB13

LOGIC TEST #16: STATUS AT EOT, ON LINE, LOADED, NO WRITE RING

PURPOSE: TO TEST EOT, SSC, SLA

PROGRAMMED SEQUENCE: THE OPERATOR IS INSTRUCTED TO MOVE TO EOT AND PLACE THE DRIVE ON LINE. EOT, SSC, SLA ARE CHECKED IN ADDITION TO ATA, MOL, WEL, DPR, DRY

LIKELY FAULT LOCATION: M8910, SLAVE CABLE, M8903

CIRCUIT	PRINT REFERENCE
SSC	LAW8, M8913, M8913YA, TCCM7
EOT	LAW6, TCCM7, M8908YA, M8913YA
SLA	LAW8, TCCM7, M9001YA, YC, M8908

LOGIC TEST #17: STATUS NT ONLINE LOADED

TEST 17 IS EXACTLY LIKE TEST 16 EXCEPT THAT THE DRIVE IS REVERSED OFF OF EOT AND THE WRITE ENABLE RING IS INSTALLED.

****
EACH OF THE NEXT 11 TESTS ARE DESIGNED TO VERIFY
THE ABILITY TO SET SPECIFIC ERROR BITS.
****

LOGIC TEST #20: ILLEGAL FUNCTION

PROGRAMMED SEQUENCE: THE WORD COUNT IS SET TO -1. ALL CODES STORED IN THE ILLEGAL FUNCTION TABLE ARE LOADED AND ILF IS CHECKED FOR EACH ONE. THEN UNEXPECTED ERRORS ARE CHECKED.

LIKELY FAULT LOCATION: M8909

CIRCUIT	PRINT REFERENCE
SET ILF DECODE	MB15, MB17
ILF FLOP	MB111
ILF MULTIPLEXER	MB110

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LOGIC TEST #21: REGISTER MODIFICATION REFUSED

PROGRAMMED SEQUENCE: INIT, SELECT SLAVE AND DRIVE. LOAD 300
@ TAPE CONTROL REGISTER LOAD WAM3 IN THE MAINTENANCE
REGISTER. LOAD THE C1 REGISTER WITH A READ COMMAND AND GO
BIT. ATTEMPT TO WRITE THE FRAME COUNT REGISTER. READ
ERROR REGISTER. CHECKING FOR RMR. CHECK FOR UNEXPECTED ERRORS
WAIT FOR ACCL. DELAY. DO EOP CLEAR.

LIKELY FAULT LOCATION: M8909

CIRCUIT	PRINT REFERENCE
RMR DECODE	MB12
RMR FLOP	MB11
RMR MULTIPLEXER	MB10

LOGIC TEST #22: CONTROL BUS PARITY (CPAR)

PROGRAMMED SEQUENCE: WRITE 20(8) INTO CS2. ENABLING THE
WRITING OF EVEN PARITY ON MASSBUS. WRITE ALL ONES TO
FRAME COUNT. RESET PAT. CHECK ERROR REGISTER FOR CPAR CHECK
FOR OTHER UNEXPECTED ERRORS.

LIKELY FAULT LOCATIONS: M8909

CIRCUIT	PRINT REFERENCE
MASSBUS PARITY TREE	MB14
CPAR FLOP	MB11
CPAR MULTIPLEXER	MB10

LOGIC TEST #23: FORMAT ERROR (FMT)

PROGRAMMED SEQUENCE: AN ILLEGAL FORMAT CODE IS LOADED INTO THE TAPE CONTROL REGISTER. WAM3 IS LOADED INTO THE MR READ COMMAND AND THE GO BIT IS SET. THE ERROR REGISTER IS CHECKED FOR FORMAT ERROR AND UNEXPECTED ERROR BITS. THIS SEQUENCE IS REPEATED FOR ALL ILLEGAL FORMAT CODES

LIKELY FAULT LOCATIONS: M8905, M8906, M8909

CIRCUIT	PRINT REFERENCE
FORMAT BITS	MR6
ILF DECODE	BF3
ILF FLOP	MB111
ILF MULTIPLEXERS	MB110

LOGIC TEST #24: DATA BUS PARITY ERROR (DPAR)

PROGRAMMED SEQUENCE: SET UP A WRAP 2 AS FOLLOWS: NORMAL FORMAT ----> TAPE CONTROL REGISTER, -10 ----> WORD COUNT, -20 ----> FRAME COUNT, WAM2 ----> MAINTENANCE REGISTER,. LOAD WRITE COMMAND AND GO BIT. SET PAT BIT IN CS2. AFTER A DELAY MR IS LOADED 4 TIMES CAUSING 2 DATA BUS TRANSFERS. DPAR AND CPAR ARE CHECKED. THEN A CHECK FOR UNEXPECTED ERRORS IS MADE MASKING OPI.

LIKELY FAULT LOCATIONS: DBUS LINES, M8905, M8906

CIRCUIT	PRINT REFERENCE
MM CLK	MR5
WRT CLK GENERATION	TCCM4
DPAR FLOP	MB111
DATA BUS PARITY TREE	BF3

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LOGIC TEST #25: NON-EXECUTABLE FUNCTION (NEF)

PROGRAMMED SEQUENCE: LOAD FC WITH -1. SET WAM 2. SET WRITE AND GO. ILF SHOULD SET DUE TO TOO SMALL INITIAL FRAME COUNT. CHECK ILF. CHECK FOR UNEXPECTED ERRORS.

LIKELY FAULT LOCATION: M8909

CIRCUIT	PRINT REFERENCE
NEF FLOP	MB111
NEF MULTIPLEXER	MB110
SET NEF	MB17

LOGIC TEST #26: FRAME COUNT ERROR

PROGRAMMED SEQUENCE: SET WC TO -10, FC TO -20 WAM3 IN MAINTENANCE REGISTER, LOAD WRITE AND GO, DELAY ISSUE MM OR CLEAR. CHECK FCE AND CHECK FOR UNEXPECTED ERRORS. FRAME COUNT ERROR SHOULD BE SET BECAUSE A WRITE OPERATION WAS TERMINATED PRIOR TO A WORD COUNT OVERFLOW.

LIKELY FAULT LOCATIONS: M8909, MB CABLE, M8903, M8905

CIRCUITS	PRINT REFERENCE
RUN LINE	MB1
EBL PLS	MB19
FCE FLOP	MB111
SHUTDOWN LOGIC	TCCM5
MAINT. FUNCTION DECODE	MR5

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LOGIC TEST #27: ILLEGAL REGISTER

PROGRAMMED SEQUENCE: IF THE RH HAS ALL MASSBUS REGISTER OPEN (MOST SYSTEM IN THE FIELD DON'T), ALL THE ILLEGAL REGISTER ADDRESSES ARE READ, CHECKING THE ILR BIT AFTER EACH ATTEMPT.

LIKELY FAULT LOCATIONS: MASSBUSS, M8909

CIRCUITS	PRINT REFERENCE
REGISTER SELECT LINES	MB1, MB2
REGISTER SELECT DECODE	MB12
ILR FLOP	MB111

LOGIC TEST #30: DRIVE TIMING ERROR

PROGRAMMED SEQUENCE:

THE MAINTENANCE REGISTER IS LOADED WITH A FUNCTION THAT IS DESIGNED TO CRIPPLE OCCUPIED. FRAME COUNT REGISTER IS CLEARED TO SET FCS LOAD WRITE COMMAND AND GO BIT. CHECK FOR DTE. THEN DRIVE IS INITIALIZED. FCS IS SET AND WRP 3 CODE IS LOADED INTO MR. WRITE COMMAND AND GO BIT ARE SET. AFTER DELAY FOR ACCELERATION, THE MR CLOCK IS GENERATED AND ANOTHER CHECK IS MADE FOR DTE. FINAL CHECK IS MADE FOR ERRORS OTHER THAN OPI. THE FIRST MAINTENANCE REGISTER CODE WHICH CRIPPLES THE OCCUPIED RECEIVER CAUSES OCCUPIED TO BE ASSERTED AND TESTS THE CIRCUITRY WHICH CHECKS FOR OCCUPIED WHEN A DATA TRANSFER COMMAND IS INITIATED. THE SECOND TEST UTILIZES THE FACT THAT THE WRP 3 CODE INHIBITS THE MASSBUS WCLK RECEIVER CREATING A SITUATION WHERE SCLK IS NOT FOLLOWED BY A WRITE CLOCK.

LIKELY FAULT LOCATIONS: M8909, M8905, M8906, MB CABLES

CIRCUITS	PRINT REFERENCES
DTE FLOP	MB111
CRIPPLE OCCUPIED FUNCTION	MR5
WRP 3 FUNCTION	MR5
PREVIOUS OCCUPIED CHECK	MB17
CHECK FOR WCLK	BF2
MM CLK	MR5

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LOGIC TEST 31: OPERATION INCOMPLETE (OPI)

PROGRAMMED SEQUENCE:

SET UP INCLUDES FORMAT, WRP 2 (BIT FIDDLER WRITE), FCS. WRITE COMMAND AND GO BIT ARE SET AND THE PROGRAM DELAYS FOR OPI. A SECOND TEST INVOLVES SETTING UP WRP 3 AND ISSUING A READ COMMAND. ESSENTIALLY THIS TEST UTILIZES THE WRAPAROUND CODES TO PREVENT ANY RECORDS BEING DETECTED AFTER A READ OR A WRITE COMMAND IS ISSUED.

LIKELY FAULT LOCATIONS: M8903, M8909

CIRCUITS	PRINT REFERENCES
OPI TIMER	TCCM5
OPI FLOP	MB111
OPI TIMER CONTROL	MB17

LOGIC TEST 32: UNSAFE (UNS)

PROGRAMMED SEQUENCE:

A NON-EXISTANT SLAVE IS SELECTED AND A READ COMMAND IS ISSUED. UNSAFE ERROR IS CHECKED.

LIKELY FAULT LOCATIONS: M8909, M8910, SLAVE CABLE

CIRCUITS	PRINT REFERENCES
UNSAFE FLOP	MB111
SET UNSAFE	MB17
MOL GENERATION	LAW6

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LOGIC TEST 33: POSITIONING IN PROGRESS (PIP)

PROGRAMMED SEQUENCE:

SET UP DRIVE AND SLAVE ARE SELECTED, FCS IS SET. A SPACE COMMAND IS ISSUED AND PIP IS CHECKED.

LIKELY FAULT LOCATIONS: M8909, M8903

CIRCUITS	PRINT REFERENCES
SPACE FUNCTION DECODE	MB15
PIP GENERATION	TCCM7
STATUS REGISTER	TCCM7

LOGIC TEST 34: PHASE-ENCODED STATUS (PES)

PROGRAMMED SEQUENCE:

DENSITY CODES 0 - 4 ARE LOADED AND PES IS CHECKED FOR EACH CODE. IT IS EXPECTED ONLY FOR DENSITY 4.

LIKELY FAULT LOCATIONS: M8905, SLAVE BUS, M8911, M8903

CIRCUITS	PRINT REFERENCES
DENSITY BITS	MR6
DENSITY LINES	SBC
PES CIRCUIT	SC3
PES STATUS BIT	TCCM7

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LOGIC TEST 35: TAPE CONTROL WRITE (TCW)

PROGRAMMED SEQUENCE:

SETUP FORMAT AND WRP-3 ARE SET, READ COMMAND IS ISSUED. TCW IS CHECKED. DRIVE IS INITIALIZED, TAPE CONTROL REGISTER IS WRITTEN TO AND TCW IS CHECKED.

LIKELY FAULT LOCATION: M8905

CIRCUIT	PRINT REFERENCES
TCW	MR6

LOGIC TEST 36: FRAME COUNTER STATUS (FCS)

PROGRAMMED SEQUENCE:

DRIVE IS INITIALIZED, FCS IS CHECKED, DRIVE IS INITIALIZED, FRAME COUNTER IS WRITTEN TO, AND FCS IS CHECKED.

LIKELY FAULT LOCATIONS: M8909, M8903

CIRCUITS	PRINT REFERENCES
FCS BIT	MB18
FCS MULTIPLEXER	TCCM7

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LOGIC TEST 37: ACCELERATION (ACCL)

PROGRAMMED SEQUENCE:

DRIVE IS INITIALIZED, FORMAT IS SET AND ACCL IS CHECKED
FOR ONE. WAM 3 CODE IS LOADED, READ COMMAND IS ISSUED.
AFTER A DELAY ACCL IS CHECKED FOR ZERO.

LIKELY FAULT LOCATIONS: M8903, M8911

CIRCUITS	PRINT REFERENCES
ACCL BIT, MOTION DELAY COUNTER	TCCM3
CLOCK	SC2

LOGIC TEST 40: PE TAPE MARK (TM)

PROGRAMMED SEQUENCE:

DRIVE IS INITIALIZED, WAMO IS SET, WRITE TAPE MARK IS SET.
AFTER DELAY TAPE MARK BIT IS CHECKED. WAMO MULTIPLEXES
THE OUTPUT OF THE WRITE DATA GENERATOR ONTO THE RDA LINES.
THE DATA SYNC MODULES SYNC ON THE DATA AND SEND ENVELOPE
INFORMATION TO THE TAPE MARK DETECTOR ON M8902.

LIKELY FAULT LOCATIONS: M8902, M8901, M8903, M8905

CIRCUITS	PRINT REFERENCES
TAPE MARK DETECTOR	TCPE4, TCPE5
TAPE MARK MULTIPLEXER	TCCM7
ENVELOPE SIGNALS	DS 3, 5, 7
WRITE DATA BUFFER	TCCM2
RDA MULTIPLEXERS	TCCM6
WRITE TAPE MARK FUNCTION	MB15
WAMO SIGNAL	MR5

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LOGIC TEST 41: NRZ TAPE MARK (TM VPE, ITM)

PROGRAMMED SEQUENCE:

SAME AS TEST 40 EXCEPT NRZ DENSITY IS SELECTED.

LIKELY FAULT LOCATIONS: M8903, M8904

CIRCUITS	PRINT REFERENCES
WRITE DATA BUFFER	TCCM2
RSDO MULTIPLEXER	TCCM6
RDA MULTIPLEXERS	TCCM6
TM DETECTOR	CNRZ4
ILLEGAL TAPE MARK FLOP	CNRZ4

SEE NOTE ON PAGE 22 FOR TESTS 42-56

LOGIC TEST 42: WRP3, NRZ, NORMAL, ODD (BIT FIDDLER READ)

PROGRAMMED SEQUENCE:

TAPE CONTROL REGISTER IS LOADED WITH DENSITY 3, FORMAT 14,
ODD PARITY WRP3 IS LOADED IN MAINT. REGISTER. READ FUNCTION
IS LOADED, EXECUTING WRAP3 CONSISTS LOADING DATA CHARACTERS
INTO MAINT. REGISTER DATA FIELD, WHERE THERE ARE MULTI-
PLEXERS TO BIT FIDDLER, MM CLK IS TOGGLED TO CREATE RDS.
THE BIT FIDDLER TRANSMIT DATA ACCESS MASSBUS DATA LINES.
WHEN ALL THE DATA HAS BEEN TRANSMITTED AN EOR CLK IS
TRANSMITTED TO N REGISTER WHICH BRINGS OPERATION TO A CLOSE.

LIKELY FAULT LOCATIONS: M8906, M8905, MASSBUS P-LINES

CIRCUITS	PRINT REFERENCES
MASSBUS CHAR. ASSEMBLE	BF5
CLK. GENERATOR	BF2
MAINT. REGISTER DATA FIELD	MR2, MR3
RDS GENERATION	MR5

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LOGIC TEST 43: WARP3, PE, NORMAL, ODD

JUST LIKE TEST 42 EXCEPT FOR DENSITY BITS.

LOGIC TEST 44: WRAP2, NRZ, NORMAL, ODD

PROGRAMMED SEQUENCE:

WRAP2 IS BIT FIDDLER WRITE. MM CLOCK IS MULTIPLEXED INTO WRT CLK SO THAT IT FORMS WRT STROBE. THE OUTPUT OF THE BIT FIDDLER IS CLOCKED INTO THE DATA FIELD OF THE MAINTENANCE REGISTER. SET UP CONSISTS OF MOVING NRZ, NORMAL FORMAT, ODD PARITY TO UNIT DESCRIPTION MAINT. REGISTER IS LOADED WITH WAM2 WRITE COMMAND IS ISSUED. AFTER THE ACCELERATION DELAY, MM CLOCK ARE GENERATED UNTIL ALL THE DATA HAS BEEN CLOCKED. SEQUENCE IS COMPLETED BY LOADING MANTENANCE REGISTER WITH EOR CLR. THE SEQUENCE IS REPEATED WITH VARYING DATA PATTERNS.

LIKELY FAULT LOCATIONS: M8906, M8905, M8903

CIRCUITS	PRINT REFERENCES
BIT FIDDLER CHAR UNPACK	BF4
BIT FIDDLER DATA REQUEST	BF2
WRT STRB.	TCCM4
MAINT. REG. DATA FIELD	MR2, MR3

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LOGIC TEST 45: WRP2, PE, NORMAL, ODD

THE TEST IS EXACTLY LIKE TEST 44 EXCEPT THAT PE WRT CLK ENBL L MUST BE ASSERTED BY M8902 TO ENABLE WR TO STROBE. THIS DOES NOT HAPPEN UNTIL THE PE WRITE CONTROL CIRCUIT HAS CLOCKED THROUGH THE PREAMBLE.

CIRCUITS	PRINT REFERENCES
(IN ADDITION TO TEST 44)	
PE WRITE CONTROL	TCPE3

LOGIC TEST 46: WRP1, NRZ, NORMAL, ODD

THIS TEST IS EXACTLY LIKE TEST 44 EXCEPT THE WRITE BUFFER (TCCM2) IS MULTIPLEXED TO THE MAINTENANCE REGISTER.

LIKELY FAULT LOCATIONS: M8903, M8904 (CRC GENERATOR)

CIRCUITS	PRINT REFERENCES
WRITE BUFFER	TCCM2
CRC GENERATOR	CNRZ2

LOGIC TEST 47: WRAP1, PE, NORMAL, ODD

IN PE MODE BOTH THE PREAMBLE AND POSAMBLE ARE CLOCKED THROUGH THE WRITE BUFFER IN ADDITION TO PHASE ENCODED DATA.

LIKELY FAULT LOCATIONS: M8902 (WRITE CONTROL STATES), M8903

CIRCUITS	PRINT REFERENCE
WRITE BUFFER	TCCM2
WRITE CONTROL	TCPE3

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LOGIC TEST 50: WRAP0, NORMAL, ODD

WRAP 0 IS THE MOST COMPLETE OF THE TM02 WRAPAROUND DATA PATH. IT CONSISTS OF A WRITE OPERATION IN WHICH THE OUTPUT OF THE WRITE DATA BUFFER IS MULTIPLEXED TO THE READ DATA INPUTS, CHECKED AND LOADED INTO THE MAINTENANCE REGISTER FOR RETRIEVAL BY THE PROCESSOR. THE WHOLE OPERATION USES THE TYPE SYSTEM CLOCKS AND HAPPENS AT THE PROPER DATA RATES. MM CLK SERVES AS A FLAG ANNOUNCING WHEN A NEW CHARACTER HAS BEEN LOADED INTO THE MAINTENANCE REGISTER. IN PE MODE EVERY OTHER CHARACTER IS READ TO ALLOW SUFFICIENT PROCESSOR LOOP TIME. IN NRZ WRAP 0 IS EXPECTED TO PRODUCE LRC ERRORS BECAUSE THE TM02 DOES NOT WRITE THE LRC CHARACTER.

LIKELY FAULT LOCATIONS: M8904, M8903

CIRCUITS	PRINT REFERENCES
CRC GENERATOR	CNRZ2
CRC CHECKOUT	CNRZ3
CRC, CRC STROBE	TCCM4
READ LINE MULTIPLEXERS	TCCM6
MM CLK	MR5
CRC READ TIMING	CNRZ4
SHUTDOWN CIRCUITRY	TCCM5

LOGIC TEST 51: WRP0, PE, NORMAL, ODD

REPEAT OF TEST 50 IN PE MODE.

LIKELY FAULT LOCATIONS: M8901, M8902, M8903

CIRCUITS	PRINT REFERENCES
DATA DISCRIMINATOR	DS2, DS4, DS6
PHASE LOCKED CLOCK	DS3, DS5, DS7
SKEW BUFFER	DS3, DS5, DS7
PE WRITE MAJOR STATES	TCPE3
PE READ MAJOR STATES	TCPE5
WRAP 0 CIRCUIT TO BLOCK RLT RDS	TCPE3
DESKEW BUFFER READ COUNTER	TCPE4

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LOGIC TEST 52: CORE DUMP WRITE, WAM2

REPEAT OF TEST 44 EXCEPT BIT FIDDLER OPERATES IN CORE DUMP MODE!

LIKELY FAULT LOCATION: M8906

LOGIC TEST 53: CORE DUMP READ, WAM3

REPEAT OF TEST 42 EXCEPT BIT FIDDLER OPERATES IN CORE DUMP MODE!

LIKELY FAULT LOCATION: M8906

LOGIC TEST 54: EVEN PARITY WRITE - WAM1

REPEAT OF TEST 46 EXCEPT EVEN PARITY IS SPECIFIED.

LIKELY FAULT LOCATION: M8903

LOGIC TEST 55: EVEN PARITY READ WAM0.

REPEAT OF TEST 50 EXCEPT EVEN PARITY IS USED.

LIKELY FAULT LOCATIONS: M8903, M8904

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LOGIC TEST 56: READ REVERSE, WAM3 (M8906)

REPEAT OF TEST 42 EXCEPT READ REVERSE COMMAND IS ISSUED.

LIKELY FAULT LOCATIONS: M8908, M8909

NOTE: FOR TESTS 42-56

FOR THE MOST PART, THIS DIAGNOSTIC TESTS PARTICULAR
AREAS OF THE TM02 LOGIC INDEPENDENT OF THE TU16., HOWEVER
THERE ARE A FEW SIGNALS WHICH ARE REQUIRED FROM THE TU16
TO COMPLETE THE TESTS, AND AT LEAST ONE CASE WHERE TU16
FAILURES INTERFERE WITH THE TESTS. THE KNOWN CASES ARE
LISTED HERE AND SHOULD BE CHECKED AS PART OF THE DEBUGGING.

1. MOL(SB)L: REQUIRED TO ENABLE CLOCK
2. CLOCK(SB)L: REQUIRED TO GENERATE ACCELERATION AND SHUTDOWN.
3. WRITE CLOCK(SB)L: USED IN WAM0 TO GENERATE DATA AND REC(SB)L
4. RSD0(SB)L: SHOULD NOT OCCUR DURING WRAP AROUND TESTS, BUT WILL
   INTERFERE WITH THEIR OPERATION IF CAUSED BY A FAILURE
   SUCH AS A GROUNDED OUTPUT FROM THE G056.

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THE NEXT 5 TESTS CONSISTS OF WRITING ON TAPE USING MAINTENANCE MODE FUNCTIONS TO FORCE ERROR CONDITIONS TO CHECK THE ERROR CHECKING CAPABILITIES. OCCASIONAL ERRORS MAY RESULT FROM TAPE DEFECTS. CONSTANT ERROR MAY BE THE RESULT OF PROBLEMS WITH ERROR CHECKING CIRCUITRY OR PROBLEMS WITH THE DRIVE. DEBUG OF THE PROBLEMS MAY BE EASIER USING DATA RELIABILITY OF UTILITY DRIVER.

LOGIC TEST 57: CYCLIC REDUNDANCY ERROR

PROGRAMMED SEQUENCE:

FIRST THE DIAGNOSTIC PERFORMS A WRAPO DESIGNED TO LOAD THE CRC CHECKER IN A KNOWN MANNER. CHECK ARE MADE FOR LRC ERROR AND THE CONTENT OF CRC REGISTER. THEN A WRITE OPERATION IS PERFORMED USING A MAINT. MODE (11CC) WHICH INHIBITS THE INITIALIZATION OF THE CRC CHECKER. THE CRC CHECKER LOGIC WHICH HAS NOT BEEN CLEARED SHOULD DETECT A CRC ERROR. UNEXPECTED ERROR BITS MAY INDICATE PROBLEMS WITH THE WRITE OPERATION.

LIKELY FAULT LOCATIONS: M8905, M8904, G056, SLAVE CABLE, M8910

CIRCUITS	PRINT REFERENCES
MM FUNCTION DECODE	MP5
CRC CHECK CIRCUIT	CNPZ3

LOGIC TEST 60: LRC

PROGRAMMED SEQUENCE:

A WRITE OPERATION IS PERFORMED WITH A MM FUNCTION (INC TMRL) WHICH ASSERTS WD(SB) 5L THROUGHOUT THE RECORD. ALL ONES DATA IS USED SO THAT THE FUNCTION ONLY INTERFERES WITH THE WRITING OF THE LRC CHARACTER WHEN NONE OF THE TM02 WRITE DATA LINES SHOULD BE ASSERTED.

LIKELY FAULT LOCATIONS: M8505, M8903, M8910, M8904

CIRCUITS	PRINT REFERENCES
MM FUNCTION DECODE	MR5
WRITE LINE DRIVERS	TCCM2
WRITE HEAD DRIVERS	LAW3, 4
LRC CHECKING	CNRZ3

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LOGIC TEST 61: PE CORRECTABLE DATA

PROGRAMMED SEQUENCE:

A PE WRITE OPERATION IS PERFORMED USING A FUNCTION WHICH WILL GROUND THE BIT STROBE LINE ON BIT 1. THIS SHOULD CAUSE THE BIT1 DEAD TRACK FLOP TO ASSERT AND CAUSE CORRECTABLE DATA ERROR. THE DEAD TRACK REGISTER IS CHECKED FOR BIT 1.

LIKELY FAULT LOCATIONS: M8905, M8901, M8902

CIRCUITS	PRINT REFERENCES
MM FUNCTION DECODE	MR5
BIT STROBE CIRCUIT	DS4
DEAD TRACK FLOP	DS5, TCPE2
DEAD TRACK PEGISTER	MR4

LOGIC TEST 62: PE INCORRECTABLE DATA

REPEAT OF TEST 61, EXCEPT THAT THE MAINT. MODE FUNCTION GROUNDS BITS STROBE FOR BITS 1, 2 AND THE WD LINE FOR BIT 5 IN HELD ASSERTED. INC. DATA AND PCF ERRORS ARE EXPECTED.

LIKELY FAULT LOCATIONS: M8902, M8901

CIRCUIT	PRINT REFERENCE
INC ERROR, PEF,	TCPE2

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LOGIC TEST 63: PE FORMAT

THE MM FUNCTION USED IN THIS TEST INVERTS THE DATA USED IN PREAMBLE AND POSTAMBLE OF BIT ONE.

LIKELY FAULT LOCATIONS: M8902, M8903, M8905

CIRCUITS	PRINT REFERENCES
PEF.	TCPE2
WRITE BUFFER	TCCM2
MM DECODE	MR5

LOGIC TEST 64: FRAME COUNT OVERFLOW

THIS TEST USES A WRAP2 TO CHECK THE OVERFLOW OF FRAME COUNT REGISTER.

LIKELY FAULT LOCATION: M8909

FRAME COUNT REGISTER MB18

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```
                        9.      LISTING
                                -------

                        %

                                .TITLE CZTUCF0 TM02/TU16 CTRL LGC
                                ;ZZ - CZTUC-F-0
                                ;21 OCT 75
                                ;R. BARNES
                                ;REVISED 21 APRIL 76 BY S. CARPENTER
                                ;REVISED 11 NOV 77 BY CLEM WALSH

                                ;       TO SUPPORT THE DYNAMIC LOADING OF THE
                                ;       SOFTWARE SWITCH REGISTER
                                .ABS


                                ;CONSOLE SWITCHES*********
                                ;
                                ;SW15:  1=HALT ON ERROR
                                ;       0=CONTINUE
                                ;SW14:  1=LOOP ON ERROR
                                ;       0=CONTINUE
                                ;SW13:  1=DO NOT PRINT ERRORS
                                ;       0=PRINT ERRORS
                                ;SW12:  1=INHIBIT ITERATIONS
                                ;       0=DO ITERATIONS
                                ;SW11:  1=CONTINUOUS CYCLE
                                ;       0=HALT AT END OF PASS
                                ;SW10:  1=HALT AT END OF EACH TEST
                                ;       0=CONTINUE
                                ;SW9:   11=DO MANUAL INTERVENTION TESTS
                                ;       0=INHIBIT MANUAL INTERVENTION
                                ;SW8:   1=NO WRAP DATA CHECK
                                ;       0=DO WRAP DATA CHECK
                                ;SW7:   1=NO WRAP STATUS CHECK
                                ;       0=DO WRAP STATUS CHECK
                                ;SW6:   1=SELECTABLE WRAP DATA PATTERN (IN SINGLE TEST)
                                ;       0=AUTO PATTERNS
                                ;SW0-5: SELECT TEST NUMBER :: 00=ALL TESTS
```

```
                        ;TU16 REGISTER BITS**********

                        ;15 ;14 ;13 ;12 ;11 ;10 ;09 ;08 ;07 ;06 ;05 ;04 ;03 ;02 ;01 ;00 ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                ;CS1:   ;SC ;TRE;MCP;SPR;DNA;PSL;A17;A16;RDY;IE ;FUN;FUN;FUN;FUN;FUN;GO ;
                        ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                ;WC:    ; WORD                                                          ;
                        ; COUNT                                                         ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                ;BA:    ; BUS                                                           ;
                        ; ADDRESS                                                       ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                ;FC:    ; FRAME                                                         ;
                        ; COUNT                                                         ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                ;CS2:   ;DLT;WCE;UPE;NED;NEM;PGE;MXF;MDP;OR ;IR ;CLR;PAT;BAI;U2 ;U1 ;U0 ;
                        ;   ;   ;   ;   ;   ;   ;   ;ERR;   ;   ;   ;   ;   ;   ;   ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                ;DS:    ;ATA;ERR;PIP;MOL;WRL;EOT;SPR;DPR;DRY;SSC;PES;SDN;IDB;TMK;BOT;SLA;
                        ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                ;ER:    ;CDE;UNS;OPI;DTE;NEF;CS ;FCE;NSG;PEF;INC;DAT;FMT;CNT;RMR;ILR;ILF;
                        ;CRC;   ;   ;   ;ITM;   ;LRC;VPE;BPE;   ;BPE;   ;   ;   ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                ;ATS:   ; ATTENTION                                                     ;
                        ; SUMMARY                                                       ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                ;CC:    ; CHECK                                                         ;
                        ; CHARACTER                                                     ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                ;DB:    ; DATA                                                          ;
                        ; BUFFER                                                        ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                ;MR:    ;DB ;DB ;DB ;DB ;DB ;DB ;DB ;DB ;DB ;WRT;MM ;OP ;OP ;OP ;OP ;MM ;
                        ; 7 ; 6 ; 5 ; 4 ; 3 ; 2 ; 1 ; 0 ; P ;CLK;CLK; 4 ; 3 ; 2 ; 1 ;GO ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                ;DT:    ; DRIVE      ; 7 ;   ;SLV;                                    ;
                        ; TYPE       ;CH ;   ;PR ;                                    ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                ;SN:    ; SERIAL                                                        ;
                        ; NUMBER                                                        ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                ;TC:    ;ACL;FCS;TCW;ENA;SPR;DEN;DEN;DEN;FMT;FMT;FMT;FMT;EVN;SSN;SSN;SSN;
                        ;   ;   ;   ;DT ;   ; 4 ; 2 ; 1 ; 8 ; 4 ; 2 ; 1 ;PAR; 4 ; 2 ; 1 ;
                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

```
                                        ;REGISTER EQUIVS**********

            000000                      R0=%0
            000001                      R1=%1
            000002                      R2=%2
            000003                      R3=%3
            000004                      R4=%4
            000005                      R5=%5
            000006                      SP=%6
            000007                      PC=%7

                                        ;TRAP CATCHERS**********

            000000                      .=0
            000200                      .REPT 200
                                        .+2
                                        HALT
                                        .ENDR

                                ;       ************************************************************************
                                ;                               ACT11 HOOKS
                                ;       ************************************************************************

                                            $SVPC=.

            000040                          .=40
000040      000                 DRIVE:  .BYTE   0               ;DRIVE # FOR XXDP LOAD MEDIUM
                                                                ;ASSEMBLE AS A 0

            000041                          .=41
000041      000                 MEDIUM: .BYTE   0               ;XXDP LOAD MEDIUM
                                                                ;ASSEMBLE AS A 0

            000042                          .=42
000042      000000                      .WORD   0               ;LOCATION INDICATOR - AUTOM/MAN MODE
                                                                ;ASSEMBLE AS A 0

            000046                          .=46
000046      002654                      .WORD   $ENDAD          ;SET TO $ENDAD IN .$EOP

            000052                          .=52
000052      000000                      .WORD   0               ;CHARACTERISTICS OF PROGRAM
                                                                ;SET TO 0

            001000                          .=$SVPC             ;RESTORE PC

                                ;       ************************************************************************
```

```
1569
1570                    ;       **********************************************************************
1571                    ;               MACRO FOR SIZING DRIVES AND SLAVES
1572                    ;               IN CHAIN MODE.
1573
1574                            .MACRO  $CHNMODE
1575                            MOV     #-1,DRVN                ;INITIALIZE DRIVE #
1576                    NXTDRV: MOV     #-1,SLVN                ;INITIALIZE SLAVE #
1577                    1$:     MOV     #40,@CS                 ;INIT CONTROLLER
1578                            INC     DRVN                    ;STEP DRIVE #
1579                            CMP     #10,DRVN                ;ALL DRIVES TESTED?
1580                            BEQ     TENDO                   ;BRANCH - IF YES
1581                            MOV     DRVN,@CS                ;LOAD DRIVE #
1582                            TST     @C1                     ;ACCESS DRIVE
1583                            BIT     #10000,@CS              ;NON-EXISTANT DRIVE
1584                            BNE     1$                      ;BRANCH - IF YES (NED=1)
1585                    NXTSLV: INC     SLVN                    ;STEP SLAVE #
1586                            BNE     1$                      ;BRANCH IF NOT SLAVE 0
1587                            TST     DRVN                    ;DRIVE 0?
1588                            BNE     1$                      ;BRANCH - IF NO
1589                            TSTB    XXDPM                   ;XXDP?
1590                            BEQ     1$                      ;BRANCH - IF NO
1591                            INC     SLVN                    ;STEP TO SLAVE #1
1592                    1$:     CMP     #10,SLVN                ;ALL SLAVES TESTED?
1593                            BEQ     NXTDRV                  ;BRANCH - IF YES
1594                            MOV     SLVN,@TC                ;LOAD SLAVE UNIT #
1595                            BIT     #2000,@DT               ;SLAVE PRESENT?
1596                            BEQ     NXTSLV                  ;BRANCH - IF NO (SPR=0)
1597                            CMPB    #2,@DT                  ;IS DRIVE A TE16 OR TU16?
1598                            BEQ     2$                      ;BRANCH IF NO
1599                            BIT     #140000,@DT             ;IS DRIVE A TAPE UNIT?
1600                            BEQ     NXTSLV                  ;BRANCH IF NO
1601                    2$:     MOV     #MSGC,R4                ;GET MESSAGE
1602                            JSR     PC,TTOUT                ;TYPE MESSAGE
1603                            HALT
1604                            .ENDM   $CHNMODE
1605
1606                    ;       **********************************************************************
1607
```

```
1608
1609                                    ;TTY INTERRUPT VECTOR**********
1610
1611            000060                  .=60
1612  000060    024254                  TTINT           ;TTY INTERRUPT HEADER ADDRESS
1613  000062    000000                  0
1614                                    .
1615                                    ;SOFTWARE SWITCH REGISTER LOC. 176**********
1616
1617            000176                  .=176
1618  000176    000000                  SWREG:  0               ;SOFTWARE SWITCH REGISTER
1619
1620
1621                                    ;START ADDRESS**********
1622
1623            000200                  .=200
1624  000200    005000                  CLR     R0
1625  000202    000167  001222          JMP     START   ;PROGRAM START
1626
1627            000210                  .=210
1628  000210    012700  000001          MOV     #1,R0           ;SET NO HEADER FLAG
1629  000214    000167  001210          JMP     START
1630
1631                                    ;TM02 INTERRUPT VECTOR**********
1632
1633            000224                  .=224
1634  000224    024242                  MTINT           ;TAPE INTERRUPT HANDLER ADDRESS
1635  000226    000340                  340
1636
```

```
1637
1638            000510                          .=510
1639                                            ;MASS BUS REGISTER EQUIVS**********
1640
1641   000510   172440                 C1:     172440
1642   000512   172442                 WC:     172442
1643   000514   172444                 BA:     172444
1644   000516   172446                 FC:     172446
1645   000520   172450                 CS:     172450
1646   000522   172452                 DS:     172452
1647   000524   172454                 ER:     172454
1648   000526   172456                 AS:     172456
1649   000530   172460                 CC:     172460
1650   000532   172462                 DB:     172462
1651   000534   172464                 MR:     172464
1652   000536   172466                 DT:     172466
1653   000540   172470                 SN:     172470
1654   000542   172472                 TC:     172472
1655   000544   172474                 BAE:    172474
1656
1657                                            ;ILLEGAL FUNCTION CODES
1658
1659   000546   005405                 ILFT:   5405
1660   000550   007415                         7415
1661   000552   016423                         16423
1662   000554   020437                         20437
1663   000556   022443                         22443
1664   000560   025447                         25447
1665   000562   031455                         31455
1666   000564   033465                         33465
1667   000566   036473                         36473
1668
1669                                            ;CONSTANTS**********
1670
1671   000570   177776                 PSW:    177776          ;PROCESSOR STATUS
1672   000572   177570                 SWR:    177570          ;SWITCH REGISTER
1673   000574   177560                 TKS:    177560          ;TTY READER STATUS
1674   000576   177562                 TKB:    177562          ;TTY READ BUFFER
1675   000600   177564                 TPS:    177564          ;TTY PUNCH STATUS
1676   000602   177566                 TPB:    177566          ;TTY PUNCH BUFFER
1677   000604   177777                 SERNUM: 177777          ;SERIAL NUMBER
1678   000606   000011                 DRVTP:  011             ;DRIVE TYPE
1679   000610   000020                 ITAMT:  20              ;ITERATION AMOUNT
1680   000612   000224                 VECT:   224             ;INTERRUPT VECTOR(RH)
1681   000614   172440                 REGS:   172440          ;STARTING REGISTER ADDRESS
1682
1683                                   ;       ********************************************************************
1684                                   ;                       ACT11 MODE INDICATORS
1685                                   ;       ********************************************************************
1686
1687   000616   000000                         AUTOM:  .WORD   0               ;AUTOMATIC MODE INDICATOR
1688   000620      000                         ACT11M: .BYTE   0               ;ACT11 AUTO MODE INDICATOR
1689   000621      000                         XXDPM:  .BYTE   0               ;XXDP AUTOM MODE INDICATOR
1690   000622      000                         ADUMPM: .BYTE   0               ;ACT11 DUMP MODE INDICATOR
1691   000623      000                         XDUMPM: .BYTE   0               ;XXDP DUMP MODE INDICATOR
1692
```

```
                                                F 4
1693                            ;       ********************************************************************************
1694
```

```
 1695                                   ;FLAGS AND COUNTERS**********
 1696
 1697  000624  000000                   TOB:    0
 1698  000626  000000                   TIB:    0
 1699  000630  000000                   HDRFL:  0
 1700  000632  000000                   EMADDR: 0
 1701  000634  000000                   DRVN:   0
 1702  000636  000000                   TR00:   0
 1703  000640  000000                   TR01:   0
 1704  000642  000000                   TR02:   0
 1705  000644  000000                   TR03:   0
 1706  000646  000000                   TR04:   0
 1707  000650  000000                   TR05:   0
 1708  000652  000000                   TR06:   0
 1709  000654  000000                   TR07:   0
 1710  000656  000000                   TR10:   0
 1711  000660  000000                   TR11:   0
 1712  000662  000000                   TR12:   0
 1713  000664  000000                   TR13:   0
 1714  000666  000000                   TR14:   0
 1715  000670  000000                   TR15:   0
 1716  000672  000000                   NRZOF:  0
 1717  000674  000000                   SLVN:   0
 1718  000676  000000                   PFLG:   0
 1719  000700  000000                   RTRN:   0
 1720  000702  000000                   ERADD:  0
 1721  000704  000000                   TEMP1:  0
 1722  000706  000000                   TEMP2:  0
 1723  000710  000000                   TEMP3:  0
 1724  000712  000000                   ITCNT:  0
 1725  000714  000000                   SAV1:   0
 1726  000716  000000                   SAV2:   0
 1727  000720  000000                   SAV3:   0
 1728  000722  000000                   SCOLP:  0
 1729  000724  000000                   ITRLP:  0
 1730  000726  000000                   EXFL:   0
 1731  000730  000000                   ATAF:   0
 1732  000732  000000                   SLAF:   0
 1733  000734  000000                   SSCF:   0
 1734  000736  000000                   ERRF:   0
 1735  000740  000000                   ASF:    0
 1736  000742  000000                   SCF:    0
 1737  000744  000000                   TREF:   0
 1738  000746  000000                   PEXFL:  0
 1739  000750  000000                   STFLG:  0
 1740  000752  000000                   LTADD:  0
 1741  000754  000000                   T24FL:  0
 1742  000756  000000                   ADDFL:  0
 1743  000760  000000                   WAM:    0
 1744  000762  000000                   FUN:    0
 1745  000764  000000                   DATC:   0
 1746  000766  000000                   WTAD:   0
 1747  000770  000000                   DATAD:  0
 1748  000772  000000                   RDAD:   0
 1749  000774  000000                   W2FLG:  0
 1750  000776  000000                   DERFL:  0
```

```
1751  001000  000000                  PREFL:  0
1752  001002  000000                  SERFL:  0
1753  001004  000000                  CRCNT:  0
1754  001006  000000                  UDES:   0
1755  001010  000000                  WPGFL:  0
1756  001012  000000                  PATRN:  0
1757  001014  000000                  STATF:  0
1758  001016  000000                  RDRVF:  0
1759  001020  000000                  RCDP:   0
1760  001022  000000                  STATC:  0
1761  001024  000000                  SKAT:   0
1762  001026  000000                  PCNTR:  0               ;PASS COUNTER
1763
1764                                  ;**********
1765  001030  000000                  PAFLG:  0
1766  001032  000000                  RH17F:  0
1767                                  ;**********
1768
1769                                          ;EXPT WRAP STATUS*******
1770
1771  001034  000000                  WCS1:   0
1772  001036  000000                  WCS2:   0
1773  001040  000000                  WDS:    0
1774  001042  000000                  WER:    0
1775
1776                                          ;DATA PATTERN GENERATORS******
1777
1778  001044  000000                  DATBL:  0
1779  001046  016044                  DATA0:  DAT1    ;ALL ONE BITS
1780  001050  016066                  DATA1:  DAT2    ;ALL ZERO BITS
1781  001052  016074                  DATA2:  DAT3    ;ALTERNATING ONE/ZERO BITS
1782  001054  016104                  DATA3:  DAT4    ;ALL BITS 0-377
1783
1784                                          ;CORE DUMP PATTERNS*******
1785
1786  001056  000005                  WCDP2:  5
1787  001060  000005                          5
1788  001062  000012                          12
1789  001064  000012                          12
1790  001066  000000                          0
1791  001070  000017                  WCDP0:  17
1792  001072  000017                          17
1793  001074  000017                          17
1794  001076  000017                          17
1795  001100  000000                          0
```

```
1796
1797                                        ;LOGIC TEST ENTRY TABLE**********
1798
1799  001102  000000                TSTTBL. 0
1800  001104  000000                        0
1801  001106  002724                T1AD:   LT1
1802  001110  002724                T1IAD:  LT1
1803  001112  003154                T2AD:   LT2
1804  001114  003154                T2IAD:  LT2
1805  001116  003362                T3AD:   LT3
1806  001120  003364                T3IAD:  LT3!T
1807  001122  003546                T4AD:   LT4
1808  001124  003546                T4IAD:  LT4
1809  001126  004024                T5AD:   LT5
1810  001130  004032                T5IAD:  LT5IT
1811  001132  004226                T6AD:   LT6
1812  001134  004230                T6IAD:  LT6IT
1813  001136  004440                T7AD:   LT7
1814  001140  004442                T7IAD:  LT7IT
1815  001142  004564                T10AD:  LT10
1816  001144  004566                T10IAD: LT10IT
1817  001146  004720                T11AD:  LT11
1818  001150  004722                T111AD: LT111T
1819  001152  005162                T12AD:  LT12
1820  001154  005164                T12IAD: LT12IT
1821  001156  005370                T13AD:  LT13
1822  001160  005400                T13IAD: LT13IT
1823  001162  005472                T14AD:  LT14
1824  001164  005540                T141AD: LT141T
1825  001166  005610                T15AD:  LT15
1826  001170  005656                T151AD: LT151T
1827  001172  005726                T16AD:  LT16
1828  001174  005774                T161AD: LT161T
1829  001176  006044                T17AD:  LT17
1830  001200  006112                T171AD: LT171T
1831  001202  006162                T20AD:  LT20
1832  001204  006176                T201AD: LT201T
1833  001206  006326                T21AD:  LT21
1834  001210  006342                T211AD: LT211T
1835  001212  006472                T22AD:  LT22
1836  001214  006506                T221AD: LT221T
1837  001216  006616                T23AD:  LT23
1838  001220  006632                T231AD: LT231T
1839  001222  006746                T24AD:  LT24
1840  001224  006762                T241AD: LT241T
1841  001226  007272                T25AD:  LT25
1842  001230  007306                T251AD: LT251T
1843  001232  007424                T26AD:  LT26
1844  001234  007432                T261AD: LT261T
1845  001236  007640                T27AD:  LT27
1846  001240  007664                T271AD: LT271T
1847  001242  007756                T30AD:  LT30
1848  001244  010000                T301AD: LT301T
1849  001246  010274                T31AD:  LT31
1850  001250  010310                T311AD: LT311T
1851  001252  010624                T32AD:  LT32
```

```
1852  001254  010640                T321AD:  LT321T
1853  001256  010756                T33AD:   LT33
1854  001260  010772                T331AD:  LT331T
1855  001262  011060                T34AD:   LT34
1856  001264  011102                T341AD:  LT341T
1857  001266  011222                T35AD:   LT35
1858  001270  011236                T351AD:  LT351T
1859  001272  011374                T36AD:   LT36
1860  001274  011410                T361AD:  LT361T
1861  001276  011514                T37AD:   LT37
1862  001300  011530                T371AD:  LT371T
1863  001302  011664                T40AD:   LT40
1864  001304  011706                T401AD:  LT401T
1865  001306  012012                T41AD:   LT41
1866  001310  012026                T411AD:  LT411T
1867  001312  012260                T42AD:   LT42
1868  001314  012260                         LT42
1869  001316  012372                T43AD:   LT43
1870  001320  012372                         LT43
1871  001322  012454                T44AD:   LT44
1872  001324  012454                         LT44
1873  001326  012562                T45AD:   LT45
1874  001330  012562                         LT45
1875  001332  012644                T46AD:   LT46
1876  001334  012644                         LT46
1877  001336  012752                T47AD:   LT47
1878  001340  012752                         LT47
1879  001342  013040                T50AD:   LT50
1880  001344  013040                         LT50
1881  001346  013146                T51AD:   LT51
1882  001350  013146                         LT51
1883  001352  013230                T52AD:   LT52
1884  001354  013230                         LT52
1885  001356  013342                T53AD:   LT53
1886  001360  013342                         LT53
1887  001362  013470                T54AD:   LT54
1888  001364  013470                         LT54
1889  001366  013540                T55AD:   LT55
1890  001370  013540                         LT55
1891  001372  013610                T56AD:   LT56
1892  001374  013610                         LT56
1893  001376  013666                T57AD:   LT57
1894  001400  013716                T571AD:  LT571T
1895  001402  014224                T60AD:   LT60
1896  001404  014244                T601AD:  LT601T
1897  001406  014452                T61AD:   LT61
1898  001410  014500                T611AD:  LT611T
1899  001412  014730                T62AD:   LT62
1900  001414  014756                T621AD:  LT621T
1901  001416  015202                T63AD:   LT63
1902  001420  015230                T631AD:  LT631T
1903  001422  015444                T64AD:   LT64
1904  001424  015460                T641AD:  LT641T
1905  001426  000000                TADX:    0
```

```
                                        .EVEN
                                        ;PROGRAM START AND HOUSEKEEPING**********
                                
001430  012777  000340  177132  START:  MOV     #340,@PSW       ;SET PRIORITY
001436  012706  000500                  MOV     #500,SP         ;SET STACK POINTER
                                
                                ;       ********************************************************************
                                ;               DIAGNOSTIC SETUP FOR EXECUTION
                                ;               UNDER ACT11.
                                ;       ********************************************************************
                                
001442  004767  024176                  JSR     PC,CKMODE               ;CHECK FOR MODE OF OPERATION
001446  005767  177144                  TST     AUTOM                   ;IS IT AUTOMATIC MODE
001452  001001                          BNE     1$                      ;BRANCH - IF YES
001454  000412                          BR      SUSWR                   ;CHECK SWR IN DUMPM
001456  032737  020000  000052  1$:     BIT     #20000,@#52             ;SET UP FOR MANUAL INTERVENTION
001464  001406                          BEQ     SUSWR                   ;BRANCH - IF NO
001466  012704  025772                  MOV     #MSGC,R4                ;GET MESSAGE
001472  004767  023020                  JSR     PC,TTOUT                ;TYPE MESSAGE
001476  000167  024234                  JMP     ABORT                   ;AND ABORT THE PROGRAM
                                
                                ;       ********************************************************************
                                
001502  013746  000006          SUSWR:  MOV     @#6,-(SP)               ;SAVE VECTORS
001506  013746  000004                  MOV     @#4,-(SP)
001512  012737  001532  000004          MOV     #1$,@#4                 ;SET UP FOR TIMEOUT
001520  022777  177777  177044          CMP     #-1,@SWR                ;REFERENCE HARDWARE SWITCH REGISTER
001526  001402                          BEQ     2$
001530  000404                          BR      3$
001532  022626                  1$:     CMP     (SP)+,(SP)+             ;ADJUST STACK
001534  012767  000176  177030  2$:     MOV     #SWREG,SWR              ;POINT TO SOFTWARE SWITCH REG
001542  012637  000004          3$:     MOV     (SP)+,@#4               ;RESTORE VECTORS
001546  012637  000006                  MOV     (SP)+,@#6
001552  022767  000176  177012          CMP     #SWREG,SWR              ;IS SWREG SELECTED
001560  001002                          BNE     4$
001562  004767  023400                  JSR     PC,CNTLU                ;CHECK FOR CONTROL G
                                
001566                          4$:
                                ;       ********************************************************************
                                ;               IF IN ACT11 MODE INHIBIT TYPING PROGRAM
                                ;               IDENTIFICATION AND MANUAL INTERVENTION
                                
001566  005767  177026                  TST     ACT11M                  ;AUTOMATIC MODE?
001572  001142                          BNE     TSCD                    ;BRANCH - IF YES
                                
                                ;       ********************************************************************
                                
001574  005700                          TST     R0
001576  001136                          BNE     ST2
001600  005067  177220                  CLR     SKAT            ;CLEAR SKIP ADDRESS TEST FLAG
001604  012704  026106                  MOV     #MSG1,R4
001610  004767  022702                  JSR     PC,TTOUT        ;PRINT TITLE
001614  012704  027710                  MOV     #MSG44,R4
001620  004767  022672                  JSR     PC,TTOUT        ;REQUEST REGISTER ADDRESS
001624  016703  176764                  MOV     REGS,R3
001630  004767  023024                  JSR     PC,OCTP         ;PRINT CURRENT ADDRESS
```

```
 1962  001634  012705  000614                MOV     #REGS,R5        ;SET ADDRESS SAVE LOC
 1963  001640  012701  000006                MOV     #6,R1           ;SET SIZE OF RESPONSE
 1964  001644  012702  176400                MOV     #176400,R2      ;SET UPPER LIMIT
 1965  001650  012703  172300                MOV     #172300,R3      ;SET LOWER LIMIT
 1966  001654  004767  022400                JSR     PC,TTR          ;GO GET RESPONSE
 1967  001660  012704  027732                MOV     #MSG45,R4
 1968  001664  004767  022626                JSR     PC,TTOUT        ;REQUEST VECTOR
 1969  001670  016703  176716                MOV     VECT,R3
 1970  001674  004767  022760                JSR     PC,OCTP         ;PRINT CURRENT VECTOR
 1971  001700  012705  000612                MOV     #VECT,R5        ;SET ADDRESS SAVE LOC
 1972  001704  012701  000003                MOV     #3,R1           ;SET SIZE OF RESPONSE
 1973  001710  012702  000224                MOV     #224,R2         ;SET UPPER LIMIT
 1974  001714  012703  000150                MOV     #150,R3         ;SET LOWER LIMIT
 1975  001720  004767  022334                JSR     PC,TTR          ;GO GET RESPONSE
 1976  001724  016700  176662                MOV     VECT,R0         ;GET VECTOR
 1977  001730  012720  024242                MOV     #MTINT,(R0)+    ;LOAD INTERRUPT ADDRESS IN VECTOR
 1978  001734  012710  000340                MOV     #340,(R0)       ;LOAD PRIORITY
 1979  001740  016700  176650                MOV     REGS,R0         ;GET START OF REGS
 1980  001744  012701  000016                MOV     #16,R1          ;SET NUMBER OF REGS
 1981  001750  012702  000510                MOV     #C1,R2          ;GET START OF TABLE
 1982  001754  010022              ST0:      MOV     R0,(R2)+        ;BUILD TABLE
 1983  001756  062700  000002                ADD     #2,R0           ;BUMP ADDRESS
 1984  001762  005301                        DEC     R1              ;SEE IF DONE
 1985  001764  001373                        BNE     ST0             ;IF NOT: BR
 1986  001766  012702  000624                MOV     #T0B,R2
 1987  001772  012700  000077                MOV     #77,R0
 1988  001776  005022              ST1:      CLR     (R2)+           ;CLEAR FLAGS + COUNTERS
 1989  002000  005300                        DEC     R0
 1990  002002  001375                        BNE     ST1
 1991  002004  012704  030160                MOV     #MSG52,R4
 1992  002010  004767  022502                JSR     PC,TTOUT        ;PRINT NRZ ONLY REQUEST
 1993  002014  012705  000672                MOV     #NRZOF,R5
 1994  002020  012701  000001                MOV     #1,R1           ;SET SIZE OF ENTRY
 1995  002024  012702  000001                MOV     #1,R2           ;SET UPPER LIMIT
 1996  002030  012703  000000                MOV     #0,R3           ;SET LOWER LIMIT
 1997  002034  004767  022220                JSR     PC,TTR          ;GO GET RESPONSE
 1998  002040  012704  030267                MOV     #MSG56,R4
 1999  002044  004767  022446                JSR     PC,TTOUT        ;REQUEST STATIC ONLY
 2000  002050  012705  001022                MOV     #STATC,R5       ;SET ADDRESS OF STATIC FLAG
 2001  002054  012701  000001                MOV     #1,R1           ;SET SIZE OF RESPONSE
 2002  002060  012702  000001                MOV     #1,R2           ;SET UPPER LIMIT
 2003  002064  012703  000000                MOV     #0,R3           ;SET LOWER LIMIT
 2004  002070  004767  022164                JSR     PC,TTP          ;GET RESPONSE
 2005  002074  005067  176726      ST2:      CLR     PCNTR           ;CLEAR PASS COUNTER
```

```
2006
2007                                    ;TEST SCHEDULAR**********
2008
2009  002100  005067  176704        TSCD: CLR     WPGFL           ;CLEAR WRAP PATRN FLAG
2010  002104  052777  000100  176462      BIS     #100,@TKS       ;SET KEYBOARD IE BIT
2011  002112  005067  176632              CLR     STFLG           ;CLEAR SINGLE TEST FLAG
2012
2013                                    ;*****************************************************************
2014
2015  002116  005067  176710              CLR     RH17F           ;SET RH11 INDICATOR
2016  002122  013746  000004              MOV     @#4,-(SP)       ;SAVE ERROR TRAP AND VECTORS
2017  002126  013746  000006              MOV     @#6,-(SP)       ;SAVE PRIORITY
2018  002132  016737  000020  000004      MOV     1$,@#4          ;SET TIME OUT
2019  002140  005037  000006              CLR     @#6             ;SET LOW PRIORITY
2020  002144  005777  176374              TST     @BAE            ;REFERENCE BAE REGISTER
2021  002150  012767  000001  176654      MOV     #1,RH17F        ;SET RH70 INDICATOR
2022  002156  012637  000006        1$:   MOV     (SP)+,@#6       ;RESTORE ERROR TYPE
2023  002162  012637  000004              MOV     (SP)+,@#4
2024
2025                                    ;*****************************************************************
2026
2027  002166  017700  176400              MOV     @SWR,R0
2028  002172  042700  177700              BIC     #177700,R0
2029  002176  005700                       TST     R0
2030  002200  001151                       BNE     STSCD           ;GO SELECT SINGLE TEST
2031
2032                                    ;*****************************************************************
2033
2034  002202  005767  176410              TST     AUTOM           ;AUTOMATIC MODE?
2035  002206  001473                       BEQ     TSCDA           ;BRANCH - IF NOT
2036  002210                               $CHNMODE                ;MACRO FOR CHAINMODE
2037  002210  012767  177777  176416              MOV     #-1,DRVN        ;INITIALIZE DRIVE #
2038  002216  012767  177777  176450  NXTDRV:    MOV     #-1,SLVN        ;INITIALIZE SLAVE #
2039  002224  012777  000040  176266  1$:       MOV     #40,@CS         ;INIT CONTROLLER
2040  002232  005267  176376                    INC     DRVN            ;STEP DRIVE #
2041  002236  022767  000010  176370            CMP     #10,DRVN        ;ALL DRIVES TESTED?
2042  002244  001562                            BEQ     TENDO           ;BRANCH - IF YES
2043  002246  016777  176362  176244            MOV     DRVN,@CS        ;LOAD DRIVE #
2044  002254  005777  176230                    TST     @C1             ;ACCESS DRIVE
2045  002260  032777  010000  176232            BIT     #10000,@CS      ;NON-EXISTANT DRIVE
2046  002266  001356                            BNE     1$              ;BRANCH - IF YES (NED=1)
2047  002270  005267  176400        NXTSLV:     INC     SLVN            ;STEP SLAVE #
2048  002274  001010                            BNE     1$              ;BRANCH IF NOT SLAVE 0
2049  002276  005767  176332                    TST     DRVN            ;DRIVE 0?
2050  002302  001005                            BNE     1$              ;BRANCH - IF NO
2051  002304  105767  176311                    TSTB    XXDPM           ;XXDP?
2052  002310  001402                            BEQ     1$              ;BRANCH - IF NO
2053  002312  005267  176356                    INC     SLVN            ;STEP TO SLAVE #1
2054  002316  022767  000010  176350  1$:       CMP     #10,SLVN        ;ALL SLAVES TESTED?
2055  002324  001734                            BEQ     NXTDRV          ;BRANCH - IF YES
2056  002326  016777  176342  176206            MOV     SLVN,@TC        ;LOAD SLAVE UNIT #
2057  002334  032777  002000  176174            BIT     #2000,@DT       ;SLAVE PRESENT?
2058  002342  001752                            BEQ     NXTSLV          ;BRANCH - IF NO (SPR=0)
2059  002344  122777  000002  176164            CMPB    #2,@DT          ;IS DRIVE A TE16 OR TU16?
2060  002352  001404                            BEQ     2$              ;BRANCH IF NO
2061  002354  032777  140000  176154            BIT     #140000,@DT     ;IS DRIVE A TAPE UNIT?
```

```
2062  002362  001742                          BEQ     NXTSLV                  ;BRANCH IF NO
2063  002364  012704  025772          2$:     MOV     #MSGC,R4                ;GET MESSAGE
2064  002370  004767  022122                  JSR     PC,TTOUT                ;TYPE MESSAGE
2065  002374  000000                          HALT
2066
2067                              ;           ********************************************************************
2068
2069  002376  012767  001102  176346  TSCDA:  MOV     #TSTTBL,LTADD
2070  002404  062767  000004  176340  TSCD0:  ADD     #4,LTADD
2071  002412  016767  176334  176304          MOV     LTADD,LTRLP
2072  002420  062767  000002  176276          ADD     #2,ITRLP        ;SET ITERATION ADDRESS
2073  002426  005777  176320                  TST     @LTADD
2074  002432  001002                          BNE     TSCD1
2075  002434  000167  000136                  JMP     TEND            ;GO TO END ROUTINE
2076  002440  005067  176164          TSCD1:  CLR     HDRFL           ;CLEAR PRINT HEADER FLAG
2077  002444  017700  176302                  MOV     @LTADD,R0       ;SET POINTER TO TEST
2078  002450  000110                          JMP     (R0)            ;GO TO TEST
2079  002452  004767  022436          TSCD2:  JSR     PC,CKSWR        ;CHECK FOR CNTL G
2080  002456  032777  002000  176106          BIT     #2000,@SWR      ;SEE IF HALT ON TEST
2081  002464  001404                          BEQ     TSCD3           ;IF NOT: BR
2082  002466  004767  023142                  JSR     PC,STOP
2083  002472  005067  176312                  CLR     WPGFL           ;CLEAR WRAP DATA GENERATOR FLAG
2084  002476  005767  176246          TSCD3:  TST     STFLG           ;SE IF SINGLE TEST
2085  002502  001740                          BEQ     TSCD0           ;IF NOT: BR
2086  002504  017700  176062                  MOV     @SWR,R0
2087  002510  042700  177700                  BIC     #177700,R0      ;MASK TEST NUMBER
2088  002514  005700                          TST     R0              ;SEE IF RETURN TO ALL
2089  002516  001002                          BNE     STSCD           ;BRANCH - IF NOT
2090  002520  000167  177354                  JMP     TSCD            ;JUMP - IF YES
2091  002524  012767  000001  176216  STSCD:  MOV     #1,STFLG        ;SET SINGLE TEST FLAG
2092  002532  022700  000065                  CMP     #65,R0          ;SEE IF EXCEEDED TESTS
2093  002536  003417                          BLE     TEND            ;IF SO: BR
2094  002540  000241                          CLC
2095  002542  006100                          ROL     R0
2096  002544  006100                          ROL     R0              ;SET TABLE MODIFIER
2097  002546  012767  001102  176176          MOV     #TSTTBL,LTADD
2098  002554  060067  176172                  ADD     R0,LTADD        ;SET TEST POINTER
2099  002560  016767  176166  176136          MOV     LTADD,ITRLP
2100  002566  062767  000002  176130          ADD     #2,ITRLP        ;SET ITERATION POINTER
2101  002574  000721                          BR      TSCD1
2102
2103                              ;           ********************************************************************
2104
2105  002576  000240                  TEND:   NOP
2106  002600  005767  176012                  TST     AUTOM           ;AUTOMATIC MODE?
2107  002604  001402                          BEQ     TENDO           ;BRANCH - IF NO
2108  002606  000167  177456                  JMP     NXTSLV          ;GET ANOTHER SLAVE DEVICE
2109
2110
2111  002612                          TENDO:
2112
2113                              ;           ********************************************************************
2114
2115  002612  012704  027550                  MOV     #MSG41,R4
2116  002616  004767  021674                  JSR     PC,TTOUT        ;PRINT END OF PASS
2117  002622  016703  176200                  MOV     PCNTR,R3
```

```
2118  002626  004767  022026                    JSR     PC,OCTP         ;PRINT PASS NUMBER
2119
2120                              ;       ********************************************************************
2121                              ;               AUTOMATIC MODE END OF PASS
2122                              ;       ********************************************************************
2123
2124  002632  005767  176172                    TST     PAFLG           ;PASS INDICATOR SET?
2125  002636  001002                            BNE     3$              ;BRANCH - IF YES
2126  002640  005267  176164                    INC     PAFLG           ;SET PASS INDICATOR
2127  002644  013704  000042           3$:     MOV     @#42,R4         ;CONTENTS OF 42 TO R4
2128  002650  001405                            BEQ     HERE            ;BRANCH - IF NOT AUTO MODE
2129  002652  000005                            RESET                   ;CLEAR THE WORLD
2130  002654  004714                   $ENDAD:  JSR     PC,(R4)         ;RETURN TO MONITOR
2131  002656  000240                            NOP
2132  002660  000240                            NOP
2133  002662  000240                            NOP
2134  002664                           HERE:
2135  002664  005767  175726                    TST     AUTOM           ;CHECK FOR AUTOM MODE
2136  002670  001006                            BNE     TENDX           ;BRANCH - IF YES
2137  002672  032777  004000  175672            BIT     #4000,@SWR      ;SEE IF HALT ON PASS
2138  002700  001002                            BNE     TENDX           ;IF NOT: BR
2139  002702  004767  022726                    JSR     PC,STOP
2140  002706  012767  000001  176110   TENDX:   MOV     #1,SKAT         ;SET SKIP ADDRESS TEST FLAG
2141  002714  005267  176106                    INC     PCNTR           ;BUMP PASS COUNTER
2142  002720  000167  177154                    JMP     TSCD            ;RESTART
```

```
2143                                        ;LOGIC TEST 1:  DRIVE ADDRESSING**********
2144
2145  002724  005767  176074        LT1:    TST     SKAT            ;SEE IF SKIP ADDRESS TESTS
2146  002730  001403                        BEQ     LT1GO           ;IF NOT: BR
2147  002732  005767  176012                TST     STFLG           ;SEE IF SINGLE TEST
2148  002736  001504                        BEQ     LT1X            ;IF NOT: BR
2149  002740  012704  026221        LT1GO:  MOV     #MSG2A,R4
2150  002744  004767  021546                JSR     PC,TTOUT        ;PRINT TEST INSTRUCTIONS
2151  002750  012767  030314  175654 LT1G:   MOV     #MSLT1,EMADDR   ;SET HEADER ADDRESS
2152  002756  012704  026202                MOV     #MSG2,R4
2153  002762  004767  021530                JSR     PC,TTOUT        ;REQUEST DRIVE NUMBER
2154  002766  012705  000634                MOV     #DRVN,R5
2155  002772  012701  000001                MOV     #1,R1
2156  002776  012702  000007                MOV     #7,R2
2157  003002  012703  000000                MOV     #0,R3
2158  003006  004767  021246                JSR     PC,TTR          ;GET DRIVE NUMBER
2159  003012  005767  175666                TST     TEMP1           ;SEE IF ANOTHER DRIVE
2160  003016  001454                        BEQ     LT1X            ;IF NOT: BR
2161  003020  005001                        CLR     R1              ;SELECT DRIVE 0
2162  003022  012700  000010                MOV     #10,R0          ;SET NUMBER OF DRIVES
2163  003026  012777  000040  175464 LT1A:   MOV     #40,@CS         ;INIT
2164  003034  010177  175460                MOV     R1,@CS          ;SELECT DRIVE
2165  003040  005777  175444                TST     @C1             ;ACCESS DRIVE
2166  003044  032777  010000  175446        BIT     #10000,@CS      ;SEE IF NED
2167  003052  001005                        BNE     LT1B            ;IF SO: BR
2168  003054  026701  175554                CMP     DRVN,R1         ;SEE IF SHOULD BE NED
2169  003060  001407                        BEQ     LT1C            ;IF NOT: BR
2170  003062  000167  000022                JMP     LT1ER           ;ELSE GO TO ERROR
2171  003066  026701  175542        LT1B:   CMP     DRVN,R1         ;SEE IF SHOULD BE NED
2172  003072  001002                        BNE     LT1C            ;IF SO: BR
2173  003074  000167  000020                JMP     LT1ER1          ;ELSE GO TO ERROR
2174  003100  005300                LT1C:   DEC     R0
2175  003102  001722                        BEQ     LT1G            ;IF DONE ALL: BR
2176  003104  005201                        INC     R1              ;SELECT NEXT DRIVE
2177  003106  000747                        BR      LT1A            ;CONTINUE
2178  003110  012767  000001  175610 LT1ER:  MOV     #1,EXFL         ;FLAG EXPT
2179  003116  000403                        BR      LT1ER2
2180  003120  012767  000002  175600 LT1ER1: MOV     #2,EXFL         ;FLAG NOT EXPT
2181  003126  012767  026350  175546 LT1ER2: MOV     #MSG3,ERADD     ;FLAG CONDITION
2182  003134  012767  003026  175560        MOV     #LT1A,SCOLP     ;SET SCOPE ADDRESS
2183  003142  004767  017312                JSR     PC,LTGER        ;GO PRINT LOGIC TEST ERROR
2184  003146  000754                        BR      LT1C            ;CONTINUE TEST
2185  003150  000167  177276        LT1X:   JMP     TSCD2           ;RETURN TO SCHED
2186
```

```
2187                                        ;LOGIC TEST 2: REGISTER ADDRESSING**********
2188
2189  003154  000240                LT2:    NOP
2190  003156  012777  000040  175334 LT2IT:  MOV     #40,@CS          ;INIT
2191  003164  016777  175444  175326        MOV     DRVN,@CS         ;SELECT DRIVE
2192  003172  012767  030370  175432        MOV     #MSLT2,EMADDR    ;SAVE LT2 HEADER ADDRESS
2193  003200  012705  000510               MOV     #C1,R5           ;SET ADDRESS OF FIRST REGISTER
2194  003204  012700  000016               MOV     #16,R0           ;SET NUMBER OF REGISTERS
2195  003210  012702  000636               MOV     #TR00,R2         ;SET START OF REGISTER BUFFER
2196  003214  011501                LT2A:   MOV     (R5),R1
2197  003216  011112                        MOV     (R1),(R2)        ;READ REGISTER
2198  003220  032777  020000  175262        BIT     #20000,@C1       ;SEE IF ERROR
2199  003226  001402                        BEQ     LT2B             ;IF NOT: BR
2200  003230  004767  000024               JSR     PC,LT2ER1        ;ELSE GO TO ERROR 1
2201  003234  032777  000002  175262 LT2B:  BIT     #2,@ER           ;SEE IF ILR
2202  003242  001402                        BEQ     LT2C             ;IF NOT: BR
2203  003244  004767  000026               JSR     PC,LT2ER2        ;ELSE GO TO ERROR 2
2204  003250  022225                LT2C:   CMP     (R2)+,(R5)+      ;BUMP ADDRESS
2205  003252  005300                        DEC     R0
2206  003254  001357                        BNE     LT2A             ;CONTINUE FOR ALL REGISTERS
2207  003256  000435                        BR      LT2X
2208  003260  012767  000002  175440 LT2ER1: MOV     #2,EXFL          ;FLAG NOT EXPECTED
2209  003266  012767  026372  175406        MOV     #MSG4,ERADD      ;POINT TO CONTROLLER ERROR
2210  003274  000415                        BR      LT2ERG           ;GO TO ERROR
2211  003276  012767  000002  175422 LT2ER2: MOV     #2,EXFL          ;FLAG NOT EXPECTED
2212  003304  012767  026410  175370        MOV     #MSG5,ERADD      ;POINT TO DRIVE ERROR
2213  003312  000406                        BR      LT2ERG           ;GO TO ERROR
2214  003314  012767  000001  175404 LT2ER3: MOV     #1,EXFL          ;FLAG EXPECTED
2215  003322  012767  026372  175352        MOV     #MSG4,ERADD      ;POINT TO DRIVE
2216  003330  012767  003344  175364 LT2ERG: MOV     #LT2LP,SCOLP     ;SET SCOPE ADDRESS
2217  003336  004767  017116               JSR     PC,LTGER         ;GO PRINT
2218  003342  000207                        RTS     PC               ;ELSE CONTINUE
2219  003344  005726                LT2LP:  TST     (SP)+            ;RESET STACK
2220  003346  000167  177642               JMP     LT2A             ;LOOP
2221  003352  004767  020514        LT2X:   JSR     PC,ITER          ;GO SEE IF ITERATIONS
2222  003356  000167  177070               JMP     TSCD2            ;RETURN TO SCHED
```

```
2223                                        ;LOGIC TEST 3: CONTROL BUS**********
2224
2225  003362  000240                LT3:    NOP
2226  003364  012767  030447  175240 LT31T: MOV     #MSLT3,EMADDR    ;SET TEST HEADER
2227  003372  012701  000001              MOV     #1,R1            ;PRESET PATTERN 1
2228  003376  012700  000020              MOV     #20,R0           ;SET PATTERN CHANGE NUMBER
2229  003402  004767  020546        LT3A: JSR     PC,INIT1         ;GO INIT
2230  003406  010177  175104              MOV     R1,@FC           ;WRITE TO FC
2231  003412  032777  000010  175104      BIT     #10,@ER          ;SEE IF CPAR (TM02)
2232  003420  001013                      BNE     LT3ER1           ;IF SO: BR
2233  003422  017702  175070        LT3B: MOV     @FC,R2           ;READ FC
2234  003426  032777  020000  175054      BIT     #20000,@C1       ;SEE IF MCPE (RH)
2235  003434  001020                      BNE     LT3ER2           ;IF SO: BR
2236  003436  005300                LT3C: DEC     R0               ;SEE IF DONE PATTERN CHANGES
2237  003440  001427                      BEQ     LT3X             ;IF SO: BR
2238  003442  000241                      CLC
2239  003444  006101                      ROL     R1               ;CHANGE PATTERN
2240  003446  000755                      BR      LT3A             ;CONTINUE
2241  003450  012767  026701  175224 LT3ER1: MOV     #MSG11,ERADD     ;SET ERROR CODE
2242  003456  012767  003402  175236      MOV     #LT3A,SCOLP      ;SET SCOPE ADDRESS
2243  003464  017702  175026              MOV     @FC,R2           ;GET DATA
2244  003470  004767  020124              JSR     PC,LTGER1        ;GO DO ERROR
2245  003474  000752                      BR      LT3B
2246  003476  012767  026655  175176 LT3ER2: MOV     #MSG10,ERADD     ;SET ERROR CODE
2247  003504  012767  003422  175210      MOV     #LT3B,SCOLP      ;SET SCOPE ADDRESS
2248  003512  004767  020102              JSR     PC,LTGER1        ;GO DO ERROR
2249  003516  000747                      BR      LT3C
2250  003520  105701                LT3X: TSTB    R1               ;SEE IF DONE PATTERN 2
2251  003522  100405                      BMI     LT3XX            ;IF SO: BR
2252  003524  012701  000401              MOV     #401,R1          ;SET PATTERN 2
2253  003530  012700  000010              MOV     #10,R0           ;SET PATTERN CHANGE NUMBER
2254  003534  000722                      BR      LT3A             ;DO PATTERN 2
2255  003536  004767  020330        LT3XX: JSR    PC,ITER          ;GO SEE IF ITERATIONS
2256  003542  000167  176704              JMP     TSCD2            ;RETURN TO SCHEDULAR
```

```
2257
2258                                        ;LOGIC TEST 4: SLAVE ADDRESSING**********
2259
2260  003546  005767  175252        LT4:    TST     SKAT            ;SEE IF SKIP ADDRESS TESTS
2261  003552  001403                        BEQ     LT4GO           ;IF NOT: BR
2262  003554  005767  175170                TST     STFLG           ;SEE IF SINGLE TEST
2263  003560  001517                        BEQ     LT4X            ;IF NOT: BR
2264  003562  012704  026504        LT4GO:  MOV     #MSG8A,R4
2265  003566  004767  020724                JSR     PC,TTOUT        ;PRINT TEST INSTRUCTIONS
2266  003572  012704  026465        LT4G:   MOV     #MSG8,R4
2267  003576  004767  020714                JSR     PC,TTOUT        ;REQUEST SLAVE
2268  003602  012705  000674                MOV     #SLVN,R5
2269  003606  012701  000001                MOV     #1,R1
2270  003612  012702  000007                MOV     #7,R2
2271  003616  012703  000000                MOV     #0,R3
2272  003622  004767  020432                JSR     PC,TTR          ;GET SLAVE NUMBER
2273  003626  005767  175052                TST     TEMP1           ;SEE IF SLAVE
2274  003632  001472                        BEQ     LT4X            ;IF NOT: BR
2275  003634  005001                        CLR     R1              ;SELECT SLAVE 0
2276  003636  012700  000010                MOV     #10,R0          ;SET NUMBER OF SLAVES
2277  003642  012777  000040  174650 LT4A:  MOV     #40,@CS         ;INIT
2278  003650  016777  174760  174642        MOV     DRVN,@CS        ;SELECT DRIVE
2279  003656  010177  174660                MOV     R1,@TC          ;SELECT SLAVE
2280  003662  017703  174650                MOV     @DT,R3          ;GET DT
2281  003666  020167  175002                CMP     R1,SLVN         ;SEE IF SHOULD HAVE SPR
2282  003672  001405                        BEQ     LT4B            ;IF SO: BR
2283  003674  032703  002000                BIT     #2000,R3        ;SEE IF SPR
2284  003700  001417                        BEQ     LT4D            ;IF NOT: BR
2285  003702  000167  000044                JMP     LT4ER1          ;GO TO ERROR 1
2286  003706  032703  002000        LT4B:   BIT     #2000,R3        ;SEE IF SPR
2287  003712  001002                        BNE     LT4C            ;IF SO: BR
2288  003714  000167  000042                JMP     LT4ER2          ;ELSE GO TO ERROR
2289  003720  012704  027372        LT4C:   MOV     #MSG30,R4
2290  003724  004767  020566                JSR     PC,TTOUT        ;PRINT SERIAL NUMBER TAG
2291  003730  017703  174604                MOV     @SN,R3
2292  003734  004767  021572                JSR     PC,SNPT         ;PRINT SERIAL NUMBER
2293  003740  005300                LT4D:   DEC     R0
2294  003742  001713                        BEQ     LT4G            ;IF DONE ALL: BR
2295  003744  005201                        INC     R1              ;BUMP SLAVE
2296  003746  000167  177670                JMP     LT4A            ;CONTINUE
2297  003752  012767  000001  174746 LT4ER1: MOV     #1,EXFL         ;FLAG EXPT: NOT RECEIVED
2298  003760  000403                        BR      LT4ERG
2299  003762  012767  000002  174736 LT4ER2: MOV     #2,EXFL         ;FLAG RECVD: NOT EXPT
2300  003770  012767  030531  174634 LT4ERG: MOV     #MSLT4,EMADDR   ;SET  LT4 HEADER
2301  003776  012767  026633  174676        MOV     #MSG9,ERADD     ;SET ERROR CONDITION
2302  004004  012767  003642  174710        MOV     #LT4A,SCOLP     ;SET SCOPE ADDRESS
2303  004012  004767  016442                JSR     PC,LTGER        ;GO TO ERROR
2304  004016  000750                        BR      LT4D            ;IF NO SCOPE· BR
2305  004020  000167  176426        LT4X:   JMP     TSCD2           ;RETURN TO SCHED
2306
```

```
2307                                        ;LOGIC TEST 5: MAINTENANCE REGISTER BIT TEST**********
2308
2309  004024  012767  030610  174600  LT5:    MOV     #MSLT5,EMADDR   ;SET TEST HEADER
2310  004032  004767  020116          LT5IT:  JSR     PC,INIT1        ;GO INIT
2311  004036  012700  000032                  MOV     #32,R0          ;SET LOOP FOR BITS 4-0
2312  004042  005001                          CLR     R1              ;SET TEST WORD
2313  004044  010177  174464          LT5A:   MOV     R1,@MR          ;SEND TEST WORD TO MR
2314  004050  017702  174460                  MOV     @MR,R2          ;READ MR
2315  004054  042702  177740                  BIC     #177740,R2      ;MASK BITS 4-0
2316  004060  020102                          CMP     R1,R2           ;SEE IF EXPT = RECVD
2317  004062  001402                          BEQ     LT5B            ;IF SO: BR
2318  004064  000167  000056                  JMP     LT5ER1          ;ELSE GO TO ERROR 1
2319  004070  005300          LT5B:   DEC     R0
2320  004072  001402                          BEQ     LT5C            ;IF DONE LOOP: BR
2321  004074  005201                          INC     R1              ;BUMP TEST WORD
2322  004076  000762                          BR      LT5A            ;CONTINUE LOOP
2323  004100  012701  000015          LT5C:   MOV     #15,R1          ;SET TEST WORD + WAM 3
2324  004104  012700  001000                  MOV     #1000,R0        ;SET LOOP FOR BITS 15-7
2325  004110  010177  174420          LT5D:   MOV     R1,@MR          ;LOAD MR
2326  004114  017702  174414                  MOV     @MR,R2          ;READ MR
2327  004120  042702  000140                  BIC     #140,R2         ;MASK OUT BITS 5,6
2328  004124  020102                          CMP     R1,R2           ;SEE IF EXPT = RECVD
2329  004126  001402                          BEQ     LT5E            ;IF SO: BR
2330  004130  000167  000036                  JMP     LT5ER2          ;ELSE GO TO ERR 2
2331  004134  005300          LT5E:   DEC     R0
2332  004136  001427                          BEQ     LT5X            ;IF DONE LOOP: BR
2333  004140  062701  000200                  ADD     #200,R1         ;BUMP TEST WORD
2334  004144  000761                          BR      LT5D            ;CONTINUE LOOP
2335  004146  012767  026744  174526  LT5ER1: MOV     #MSG14,ERADD    ;SET ERROR CODE
2336  004154  012767  004044  174540          MOV     #LT5A,SCOLP     ;SET SCOPE ADDRESS
2337  004162  004767  017432                  JSR     PC,LTGER1       ;GO TO ERROR
2338  004166  000167  177676                  JMP     LT5B            ;CONTINUE
2339  004172  012767  026761  174502  LT5ER2: MOV     #MSG15,ERADD    ;SET ERROR CODE
2340  004200  012767  004110  174514          MOV     #LT5D,SCOLP     ;SET SCOPE ADDRESS
2341  004206  004767  017406                  JSR     PC,LTGER1       ;GO TO ERROR
2342  004212  000167  177716                  JMP     LT5E            ;CONTINUE
2343  004216  004767  017650          LT5X:   JSR     PC,ITER         ;GO SEE IF ITERATIONS
2344  004222  000167  176224                  JMP     TSCD2           ;RETURN TO SCHED
2345
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2346                                        ;LOGIC TEST 6:  TC REGISTER BIT TEST**********
2347
2348  004226  000240                LT6:    NOP
2349  004230  012767  030654  174374 LT61T:  MOV     #MSLT6,EMADDR   ;POINT TO LT6 HEADER
2350  004236  012700  000003                MOV     #3,R0           ;SET NUMBER OF TESTS
2351  004242  005001                LT6A1:  CLR     R1
2352  004244  004767  017704        LT6A:   JSR     PC,INIT1        ;GO INIT
2353  004250  010177  174266        LT6B:   MOV     R1,@TC          ;WRITE TC
2354  004254  017702  174262                MOV     @TC,R2          ;READ TC
2355  004260  042702  160000                BIC     #160000,R2      ;MASK OUT TCW
2356  004264  020102                        CMP     R1,R2           ;SEE IF EXPT = RECVD
2357  004266  001402                        BEQ     LT6C            ;IF SO: BR
2358  004270  000167  000036                JMP     LT6ER1          ;ELSE GO TO ERROR
2359  004274  032777  020000  174240 LT6C:   BIT     #20000,@TC      ;SEE IF TCW SET
2360  004302  001002                        BNE     LT6D            ;IF SO: BR
2361  004304  000167  000046                JMP     LT6ER2          ;ELSE GO TO ERROR
2362  004310  005300                LT6D:   DEC     R0
2363  004312  001446                        BEQ     LT6X            ;IF DONE ALL: BR
2364  004314  022700  000001                CMP     #1,R0           ;SEE IF RESET TEST
2365  004320  001750                        BEQ     LT6A1           ;IF SO: BR
2366  004322  012701  017777                MOV     #17777,R1       ;SET TEST WORD
2367  004326  000167  177712                JMP     LT6A            ;DO SET TEST
2368  004332  012767  027023  174342 LT6ER1: MOV     #MSG18,ERADD    ;SET ERROR CODE
2369  004340  012767  004250  174354        MOV     #LT6B,SCOLP     ;SET SCOPE ADDRES
2370  004346  004767  017246                JSR     PC,LTGER1       ;GO TO ERROR
2371  004352  000167  177716                JMP     LT6C            ;CONTINUE
2372  004356  012767  027007  174316 LT6ER2: MOV     #MSG17,ERADD    ;SET ERROR CODE
2373  004364  010167  174324                MOV     R1,SAV1         ;SAVE R1
2374  004370  012701  000001                MOV     #1,R1           ;SET EXPT = 1
2375  004374  005002                        CLR     R2              ;SET RECVD = 0
2376  004376  012767  004420  174316        MOV     #LT6ER4,SCOLP   ;SET SCOPE ADDRESS
2377  004404  004767  017210                JSR     PC,LTGER1       ;GO TO ERROR
2378  004410  016701  174300                MOV     SAV1,R1
2379  004414  000167  177670                JMP     LT6D            ;ELSE CONTINUE
2380  004420  005077  174116        LT6ER4: CLR     @TC             ;WRITE TO TC
2381  004424  000167  177644                JMP     LT6C            ;LOOP ON ERROR
2382  004430  004767  017436        LT6X:   JSR     PC,ITER         ;GO SEE IF ITERATIONS
2383  004434  000167  176012                JMP     TSCD2           ;RETURN TO SCHED
2384
```

```
2385                                        ;LOGIC TEST 7: FRAME COUNT BIT TEST**********
2386
2387  004440  000240                LT7:    NOP
2388  004442  012700  000003        LT71T:  MOV     #3,R0           ;SET TEST NUMBER
2389  004446  012767  030720 174156 LT7C:   MOV     #MSLT7,EMADDR   ;SET TEST HEADER
2390  004454  005001                        CLR     R1              ;SET TEST WORD
2391  004456  004767  017472        LT7A:   JSR     PC,INIT1        ;GO INIT
2392  004462  010177  174030                MOV     R1,@FC          ;CLEAR FRAME COUNT
2393  004466  017702  174024                MOV     @FC,R2          ;READ FC
2394  004472  020102                        CMP     R1,R2           ;SEE IF EXPT = RECVD
2395  004474  001402                        BEQ     LT7B            ;IF SO: BR
2396  004476  000167  000022                JMP     LT7ER1          ;ELSE GO TO ERROR
2397  004502  005300                LT7B:   DEC     R0              ;SEE IF DONE ALL
2398  004504  001421                        BEQ     LT7X            ;IF SO: BR
2399  004506  022700  000001                CMP     #1,R0           ;SEE IF RESET TEST
2400  004512  001755                        BEQ     LT7C            ;IF SO: BR
2401  004514  012701  177777                MOV     #-1,R1          ;SET TEST WORD TO -1
2402  004520  000167  177732                JMP     LT7A            ;CONTINUE
2403  004524  012767  027042 174150 LT7ER1: MOV     #MSG19,ERADD    ;SET ERROR CODE
2404  004532  012767  004456 174162        MOV     #LT7A,SCOLP     ;SET SCOPE ADDRESS
2405  004540  004767  017054                JSR     PC,LTGER1       ;GO PRINT ERROR
2406  004544  000167  177732                JMP     LT7B            ;ELSE CONTINUE
2407  004550  012700  000003        LT7X:   MOV     #3,R0           ;RESET TEST AMT
2408  004554  004767  017312                JSR     PC,ITER         ;GO SEE IF ITERATIONS
2409  004560  000167  175666                JMP     TSCD2           ;RETURN TO SCHED
2410
```

```
2411                                        ;LOGIC TEST 10: FUNCTION CODE BIT TEST**********
2412
2413  004564  000240                LT10:   NOP
2414  004566  012767  030764  174036 LT101T: MOV     #MSLT10,EMADDR  ;SET TEST HEADER
2415  004574  012700  000003              MOV     #3,R0           ;SET NUMBER OF TESTS
2416  004600  005001              LT10A1: CLR     R1              ;SET TEST WORRD
2417  004602  012777  000040  173710 LT10A:  MOV     #40,@CS         ;INIT
2418  004610  016777  174020  173702       MOV     DRVN,@CS        ;SELECT DRIVE
2419  004616  010177  173666              MOV     R1,@C1          ;WRITE C1
2420  004622  017702  173662              MOV     @C1,R2          ;READ C1
2421  004626  042702  177701              BIC     #177701,R2      ;MASK FUNCTION CODE
2422  004632  020102                      CMP     R1,R2           ;SEE IF EXPT = RECVD
2423  004634  001402                      BEQ     LT10B           ;IF SO: BR
2424  004636  000167  000022              JMP     LT10E1          ;ELSE GO TO ERROR
2425  004642  005300              LT10B:  DEC     R0
2426  004644  001421                      BEQ     LT10X           ;IF DONE ALL: BR
2427  004646  022700  000001              CMP     #1,R0           ;SEE IF RESET TEST
2428  004652  001752                      BEQ     LT10A1          ;IF SO: BR
2429  004654  012701  000076              MOV     #76,R1          ;SET TEST WORD
2430  004660  000167  177716              JMP     LT10A           ;DO SET TEST
2431  004664  012767  027061  174010 LT10E1: MOV     #MSG20,ERADD    ;SET ERROR CODE
2432  004672  012767  004602  174022       MOV     #LT10A,SCOLP    ;SET SCOPE ADDRESS
2433  004700  004767  016714              JSR     PC,LTGER1       ;GO PRINT ERROR
2434  004704  000167  177732              JMP     LT10B           ;ELSE CONTINUE
2435  004710  004767  017156        LT10X: JSR     PC,ITER         ;GO SEE IF ITERATIONS
2436  004714  000167  175532              JMP     TSCD2           ;RETURN TO SCHED
```

```
2437
2438                                        ;LOGIC TEST 11:  GO BIT SET RESET**********
2439
2440  004720  000240                LT11:   NOP
2441  004722  012767  031037  173702 LT111T: MOV     #MSLT11,EMADDR  ;SET TEST HEADER
2442  004730  004767  017220              JSR     PC,INIT1        ;GO INIT
2443  004734  017702  173550              MOV     @C1,R2          ;READ C1
2444  004740  032702  000001              BIT     #1,R2           ;SEE IF GO=0
2445  004744  001402                      BEQ     LT11B           ;IF SO:  BR
2446  004746  000167  000066              JMP     LT11E1          ;ELSE GO TO ERROR 1
2447  004752  012777  000015  173554 LT11B: MOV     #15,@MR         ;SELECT WAM 3
2448  004760  005077  173532              CLR     @FC             ;ASSURE FCS = 1
2449  004764  052777  001700  173550      BIS     #1700,@TC       ;ASSURE FMT OK
2450  004772  012777  000071  173510      MOV     #71,@C1         ;SET READ+GO
2451  005000  017702  173504              MOV     @C1,R2          ;READ C1
2452  005004  032702  000001              BIT     #1,R2           ;SEE IF GO =1
2453  005010  001002                      BNE     LT11C           ;IF SO:  BR
2454  005012  000167  000054              JMP     LT11E2          ;ELSE GO TO ERROR 2
2455  005016  004767  017132        LT11C: JSR     PC,INIT1        ;GO INIT
2456  005022  017702  173462              MOV     @C1,R2          ;READ C1
2457  005026  032702  000001              BIT     #1,R2           ;SEE IF GO=0
2458  005032  001447                      BEQ     LT11X           ;IF SO:BR
2459  005034  000167  000064              JMP     LT11E3          ;ELSE GO TO ERROR 3
2460  005040  012767  027113  173634 LT11E1: MOV     #MSG21,ERADD    ;SET ERROR CODE
2461  005046  012702  000001              MOV     #1,R2           ;SET REVD
2462  005052  005001                      CLR     R1              ;SET EXPT
2463  005054  012767  004722  173640      MOV     #LT111T,SCOLP           ;SET SCOPE ADDRESS
2464  005062  004767  016532              JSR     PC,LTGER1       ;GO PRINT ERROR
2465  005066  000167  177660              JMP     LT11B           ;ELSE CONTINUE
2466  005072  012767  027151  173602 LT11E2: MOV     #MSG22,ERADD    ;SET ERROR CODE
2467  005100  005002                      CLR     R2              ;SET RCVD
2468  005102  012701  000001              MOV     #1,R1           ;SET EXPT
2469  005106  012767  004752  173606      MOV     #LT11B,SCOLP    ;SET SCOPE ADDRESS
2470  005114  004767  016500              JSR     PC,LTGER1       ;GO PRINT ERROR
2471  005120  000167  177672              JMP     LT11C           ;ELSE CONTINUE
2472  005124  012767  027172  173550 LT11E3: MOV     #MSG23,ERADD    ;SET ERROR CODE
2473  005132  005001                      CLR     R1              ;SET EXPT
2474  005134  012702  000001              MOV     #1,R2           ;SET RCVD
2475  005140  012767  005016  173554      MOV     #LT11C,SCOLP    ;SET SCOPE ADDRESS
2476  005146  004767  016446              JSR     PC,LTGER1       ;GO PPINT ERROR
2477  005152  004767  016714        LT11X: JSR     PC,ITER         ;GO SEE IF ITERATIONS
2478  005156  000167  175270              JMP     TSCD2           ;RETURN TO SCHED
```

```
2479
2480                                        ;LOGIC TEST 12: DRIVE READY BIT**********
2481
2482  005162  000240                LT12:   NOP
2483  005164  012767  031104  173440 LT121T: MOV     #MSLT12,EMADDR  ;SET TEST HEADER
2484  005172  004767  016756              JSR     PC,INIT1        ;GO INIT
2485  005176  032777  000200  173316      BIT     #200,@DS        ;SEE IF DRY=1
2486  005204  001002                      BNE     LT12B           ;IF SO: BR
2487  005206  000167  000062              JMP     LT12E1          ;ELSE GO TO ERROR 1
2488  005212  012777  000015  173314 LT12B: MOV     #15,@MR         ;SET WAM3
2489  005220  005077  173272              CLR     @FC             ;ASSURE FCS = 1
2490  005224  052777  001700  173310      BIS     #1700,@TC       ;ASSURE FMT OK
2491  005232  012777  000071  173250      MOV     #71,@C1         ;SET READ+GO
2492  005240  032777  000200  173254      BIT     #200,@DS        ;SEE IF DRY=0
2493  005246  001402                      BEQ     LT12C           ;IF SO: BR
2494  005250  000167  000042              JMP     LT12E2          ;ELSE GO TO ERROR 2
2495  005254  004767  016674      LT12C:  JSR     PC,INIT1        ;GO INIT
2496  005260  032777  000200  173234      BIT     #200,@DS        ;SEE IF DRY=1
2497  005266  001034                      BNE     LT12X           ;IF SO: BR
2498  005270  000167  000044              JMP     LT12E3          ;ELSE GO TO ERROR 3
2499  005274  012767  027225  173400 LT12E1: MOV     #MSG24,ERADD    ;SET ERROR CODE
2500  005302  012767  005164  173412      MOV     #LT121T,SCOLP   ;SET SCOPE ADDRESS
2501  005310  004767  016276              JSR     PC,LTGER2       ;GO TO ERROR
2502  005314  000736                      BR      LT12B           ;CONTINUE
2503  005316  012767  027253  173356 LT12E2: MOV     #MSG25,ERADD    ;SET ERROR CODE
2504  005324  012767  005212  173370      MOV     #LT12B,SCOLP    ;SET LOOP ADDRESS
2505  005332  004767  016254              JSR     PC,LTGER2       ;GO PRINT ERROR
2506  005336  000746                      BR      LT12C           ;CONTINUE
2507  005340  012767  027302  173334 LT12E3: MOV     #MSG25A,ERADD   ;SET ERROR CODE
2508  005346  012767  005254  173346      MOV     #LT12C,SCOLP    ;SET ERROR LOOP
2509  005354  004767  016232              JSR     PC,LTGER2       ;GET PRINT ERROR
2510  005360  004767  016506      LT12X:  JSR     PC,ITER         ;GO TO ITERATION SUBROUTINE
2511  005364  000167  175062              JMP     TSCD2           ;RETURN TO SCHED
```

```
2512
2513                                        ;LOGIC TEST 13:  INTERRUPT TEST**********
2514
2515  005370  005000                LT13:   CLR     R0
2516  005372  012767  031155  173232        MOV     #MSLT13,EMADDR  ;SET TEST HEADER
2517  005400  004767  016550        LT131T: JSR     PC,INIT1        ;GO INIT,SELECT DRIVE, SELECT ABOVE
2518  005404  012767  005462  173266        MOV     #LT13X,RTRN     ;SET RETURN ADDRESS
2519  005412  005077  173072                CLR     @C1             ;CLEAR CS1
2520  005416  005077  173146                CLR     @PSW            ;SET PRIORITY
2521  005422  052777  000100  173060        BIS     #100,@C1        ;BIT SET IE
2522  005430  005300                LT13A:  DEC     R0
2523  005432  001376                        BNE     LT13A           ;AWAIT INTERRUPT
2524  005434  012777  000340  173126  LT13E1: MOV    #340,@PSW       ;RESET PRIORITY
2525  005442  012767  027327  173232        MOV     #MSG26,ERADD    ;SET ERROR CODE
2526  005450  012767  005400  173244        MOV     #LT131T,SCOLP   ;SET LOOP ADDRESS
2527  005456  004767  016130                JSR     PC,LTGER2       ;GO PRINT ERROR
2528  005462  004767  016404        LT13X:  JSR     PC,ITER         ;GO TO ITERATION SUBROUTINE
2529  005466  000167  174760                JMP     TSCD2           ;RETURN TO SCHED
```

```
2530
2531                                    ;THE NEXT 4 TESTS ARE MANUAL INTERVENTION STATUS TESTS.
2532                                    ;THE OPERATOR WILL BE REQUIRED TO MANIPULATE THE TU16
2533                                    ;CONTROL PANEL IN ACCORDANCE WITH TTY INSTRUCTIONS.
2534
2535                                    ;LOGIC TEST 14: STATUS AT BOT ON LINE, LOADED, NO WRITE RING**********
2536
2537                            ;       **************************************************************
2538
2539                            ;               FOR AUTOMATIC MODE SKIP TESTS
2540                            ;               WITH MANUAL INTERVENTION
2541
2542  005472  005767  173120       LT14:   TST     AUTOM           ;CHECK FOR AUTOMATIC MODE
2543  005476  001042                       BNE     LT14XX          ;BRANCH - IF YES
2544
2545                            ;       **************************************************************
2546
2547  005500  032777  001000  173064       BIT     #1000,@SWR      ;SEE IF INHIB MAN TST
2548  005506  001005                       BNE     LT14A           ;IF NOT: BR
2549  005510  005767  173234               TST     STFLG           ;SEE IF SINGLE TEST
2550  005514  001433                       BEQ     LT14XX          ;IF NOT: BR
2551  005516  000167  016412               JMP     INMT            ;ELSE GO PRINT INHIB MSG
2552  005522  012767  031222  173102 LT14A: MOV     #MSLT14,EMADDR  ;SET TEST HEADER
2553  005530  012704  034143               MOV     #MMSG1,R4       ;SET INSTRUCTION ONE
2554  005534  004767  016440               JSR     PC,INST         ;GO DO INSTRUCTION
2555  005540  004767  016410       LT141T: JSR     PC,INIT1        ;INIT, SELECT DRIVE + SLAVE
2556  005544  012701  014602               MOV     #14602,R1       ;SET TEST WORD
2557  005550  017702  172746               MOV     @DS,R2          ;ASSURE MOL,WRL,DPR,DRY,BOT
2558  005554  020102                       CMP     R1,R2
2559  005556  001410                       BEQ     LT14X           ;IF SO: BR
2560  005560  012767  005540  173134       MOV     #LT141T,SCOLP   ;SET LOOP ADDRESS
2561  005566  012767  027356  173106       MOV     #MSG27,ERADD    ;SET ERROR CODE
2562  005574  004767  016020               JSR     PC,LTGER1       ;GO PRINT ERROR
2563  005600  004767  016266       LT14X:  JSR     PC,ITER         ;GO SEE IF ITERATION
2564  005604  000167  174642       LT14XX: JMP     TSCD2           ;RETURN TO SCHED
2565
```

```
2566
2567                                        ;LOGIC TEST 15: STATUS NT BOT, OFFLINE, LOADED, NO WRITE RING**********
2568
2569                                ;       **************************************************************
2570
2571    005610                      LT15:
2572    005610  005767  173002              TST     AUTOM           ;AUTOMATIC MODE?
2573    005614  001042              BNE     LT15XX          ;BRANCH - IF YES
2574
2575                                ;       **************************************************************
2576
2577    005616  032777  001000  172746      BIT     #1000,@SWR      ;SEE IF INHIB MAN TST
2578    005624  001005              BNE     LT15A           ;IF NOT: BR
2579    005626  005767  173116              TST     STFLG           ;SEE IF SINGLE TEST
2580    005632  001433              BEQ     LT15XX          ;IF NOT: BR
2581    005634  000167  016274              JMP     INMT            ;ELSE GO PRINT INHIB MSG
2582    005640  012767  031270  172764  LT15A: MOV     #MSLT15,EMADDR  ;SET TEST HEADER
2583    005646  012704  034241              MOV     #MMSG2,R4
2584    005652  004767  016322              JSR     PC,INST         ;PRINT INSTRUCTION
2585    005656  004767  016300          LT151T: JSR     PC,INIT2        ;GO INIT, SELECT DRIVE, SLAV
2586    005662  012701  100700              MOV     #100700,R1      ;SET TEST WORD
2587    005666  017702  172630              MOV     @DS,R2          ;READ STATUS
2588    005672  020102              CMP     R1,R2           ;SEE OF EXPT=RCVD
2589    005674  001410              BEQ     LT15X
2590    005676  012767  005656  173016      MOV     #LT151T,SCOLP   ;SET LOOP ADDRESS
2591    005704  012767  027356  172770      MOV     #MSG27,ERADD    ;SET ERROR CODE
2592    005712  004767  015702              JSR     PC,LTGER1       ;GO PRINT ERROR
2593    005716  004767  016150          LT15X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
2594    005722  000167  174524          LT15XX: JMP     TSCD2           ;RETURN TO SCHED
```

```
2595
2596                                        ;LOGIC TEST 16: STATUS NT EOT, OFFLINE LOADED, NO WRITE RING**********
2597
2598                                ;       ************************************************************
2599
2600  005726                        LT16:
2601  005726  005767  172664               TST     AUTOM           ;AUTO MODE?
2602  005732  001042                        BNE     LT16XX          ;BRANCH - IF YES
2603
2604                                ;       ************************************************************
2605
2606  005734  032777  001000  172630        BIT     #1000,@SWR      ;SEE IF INHIB MAN TST
2607  005742  001005                        BNE     LT16A           ;IF NOT: BR
2608  005744  005767  173000               TST     STFLG           ;SEE IF SINGLE TEST
2609  005750  001433                        BEQ     LT16XX          ;IF NOT: BR
2610  005752  000167  016156               JMP     INMT            ;ELSE GO PRINT INHIB MSG
2611  005756  012767  031336  172646 LT16A: MOV     #MSLT16,EMADDR  ;SET TEST HEADER
2612  005764  012704  034262               MOV     #MMSG3,R4
2613  005770  004767  016204               JSR     PC,INST         ;GO PRINT INSTRUCTION
2614  005774  004767  016162        LT161T: JSR     PC,INIT2        ;SELECT DRIVE,SLAVE
2615  006000  012701  116701               MOV     #116701,R1      ;SET TEST WORD
2616  006004  017702  172512               MOV     @DS,R2          ;READ STATUS
2617  006010  020102                        CMP     R1,R2           ;SEE IF EXPT=RCVD
2618  006012  001410                        BEQ     LT16X           ;IF SO: BR
2619  006014  012767  005774  172700        MOV     #LT161T,SCOLP   ;SET LOOP ADDRESS
2620  006022  012767  027356  172652        MOV     #MSG27,ERADD    ;SET ERROR CODE
2621  006030  004767  015564               JSR     PC,LTGER1       ;GO PRINT ERROR
2622  006034  004767  016032        LT16X: JSR     PC,ITER         ;GO SEE IF ITERATION
2623  006040  000167  174406        LT16XX: JMP    TSCD2           ;RETURN TO SCHED
2624
```

```
2625
2626                                    ;LOGIC TEST 17: STATUS AT ON LINE, LOADED**********
2627
2628                            ;       ************************************************************
2629
2630  006044                    LT17:
2631  006044  005767  172546           TST     AUTOM           ;AUTOMATIC MODE?
2632  006050  001042                   BNE     LT17XX          ;BRANCH - IF YES
2633
2634                            ;       ************************************************************
2635
2636  006052  032777  001000  172512   BIT     #1000,@SWR      ;SEE IF INHIB MAN TST
2637  006060  001005                   BNE     LT17A           ;IF NOT: BR
2638  006062  005767  172662           TST     STFLG           ;SEE IF SINGLE TEST
2639  006066  001433                   BEQ     LT17XX          ;IF NOT: BR
2640  006070  000167  016040           JMP     INMT            ;ELSE GO PRINT INHIB MSG
2641  006074  012767  031404  172530   LT17A:  MOV     #MSLT17,EMADDR  ;SET TEST HEADER
2642  006102  012704  034320           MOV     #MMSG4,R4
2643  006106  004767  016066           JSR     PC,INST         ;GO PRINT INSTRUCTION
2644  006112  004767  016044           LT171T: JSR     PC,INIT2        ;SELECT DRIVE, SLAVE
2645  006116  012701  110701           MOV     #110701,R1      ;SET TEST WORD
2646  006122  017702  172374           MOV     @DS,R2          ;READ STATUS
2647  006126  020102                   CMP     R1,R2           ;SEE IF EXPT=RCVD
2648  006130  001410                   BEQ     LT17X           ;IF SO: BR
2649  006132  012767  006112  172562   MOV     #LT171T,SCOLP   ;SET LOOP ADDRESS
2650  006140  012767  027356  172534   MOV     #MSG27,ERADD    ;SET ERROR CODE
2651  006146  004767  015446           JSR     PC,LTGER1       ;YES PRINT ERROR
2652  006152  004767  015714           LT17X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
2653  006156  000167  174270           LT17XX: JMP     TSCD2           ;RETURN TO SCHED
```

```
2654                                        ;THE FOLLOWING 11 TESTS WILL TEST ALL POSSIBLE ERROR BITS
2655                                        ;BY FORCING THEIR CONDITIONS THROUGH VARIOUS ILLEGAL PROGRAMMING
2656                                        ;SEQUENCES AND USING THE MAINTENANCE WILL MODES AVAILABLE WITH TM02
2657                                        ;FOR EACH ERROR CONDITION SET THE APPROPRIATE STATUS WILL BE
2658                                        ;CHECKED.  IE: ERR, ATA, SLA, SC ETC.
2659
2660                                        ;LOGIC TEST 20:  ILLEGAL FUNCTION (ILF)**********
2661
2662  006162  012767  031452  172442  LT20:   MOV     #MSLT20,EMADDR  ;SET TEST HEADER
2663  006170  012767  006210  172524          MOV     #LT20A,SCOLP    ;SET LOOP ADDRESS
2664  006176  012700  000022          LT20IT: MOV     #22,R0          ;SET NUMBER OF ILL CODES
2665  006202  012767  000546  172474          MOV     #ILFT,TEMP1     ;POINT TO START IF TABLE
2666  006210  004767  015740          LT20A:  JSR     PC,INIT1        ;GO INIT, SELECT SLAVE + DRIVE
2667  006214  012777  177777  172270          MOV     #-1,@WC         ;SET WC= -1
2668  006222  012701  000001                  MOV     #1,R1           ;SET TEST WORD
2669  006226  117777  172452  172254          MOVB    @TEMP1,@C1      ;SET ILL CODE
2670  006234  017702  172264                  MOV     @ER,R2          ;READ ER
2671  006240  030102                          BIT     R1,R2           ;SEE IF EXPT=RCVD
2672  006242  001011                          BNE     LT20B           ;IF SO:  BR
2673  006244  012767  034603  172430          MOV     #TMS17,ERADD    ;SET ERROR CODE
2674  006252  012767  000001  172446          MOV     #1,EXFL         ;SET EXPT FLG
2675  006260  004767  014166                  JSR     PC,LTGER0       ;GO PRINT ERROR
2676  006264  000404                          BR      LT20C
2677  006266  020102          LT20B:  CMP     R1,R2           ;SEE UNEXPECTED ERRORS
2678  006270  001402                          BEQ     LT20C           ;IF NOT:  BR
2679  006272  004767  014142                  JSR     PC,LTGER3       ;ELSE PRINT ERROR
2680  006276  005300          LT20C:  DEC     R0              ;SEE IF DONE ALL ILL CODES
2681  006300  001404                          BEQ     LT20X           ;IF SO:  BR
2682  006302  005267  172376                  INC     TEMP1           ;BUMP ADDRESS
2683  006306  000167  177676                  JMP     LT20A           ;CONTINUE
2684  006312  004767  015554          LT20X:  JSR     PC,ITER         ;GO SEE IF ITERATION
2685  006316  004767  014606                  JSR     PC,DRVCLR
2686  006322  000167  174124                  JMP     TSCD2           ;RETURN TO SCHED
```

```
2687
2688                                        ;LOGIC TEST 21: REGISTER MODIFICATION REFUSED(RMR)**********
2689
2690  006326  012767  031531  172276  LT21:   MOV     #MSLT21,EMADDR  ;SET TEST HEADER
2691  006334  012767  006342  172360          MOV     #LT21IT,SCOLP   ;SET SCOPE LOOP ADDRESS
2692  006342  004767  015606          LT21IT: JSR     PC,INIT1        ;GO INIT, SELECT SLAVE, DRIVE
2693  006346  052777  000300  172166          BIS     #300,@TC        ;SET FORMAT
2694  006354  012777  000015  172152          MOV     #15,@MR         ;SET WAM3
2695  006362  012777  000071  172120          MOV     #71,@C1         ;SET READ+GO
2696  006370  005077  172122                  CLR     @FC             ;ATTEMPT WRITE TO FC
2697  006374  012701  000004                  MOV     #4,R1           ;SET TEST WORD
2698  006400  017702  172120                  MOV     @ER,R2          ;GET ER
2699  006404  030102                          BIT     R1,R2           ;SEE IF EXPT=RCVD
2700  006406  001011                          BNE     LT21A           ;IF SO: BR
2701  006410  012767  034617  172264          MOV     #TMS19,ERADD    ;SET ERROR CODE
2702  006416  012767  000001  172302          MOV     #1,EXFL         ;SET EXPT FLG
2703  006424  004767  014022                  JSR     PC,LTGER0       ;GO PRINT ERROR
2704  006430  000404                          BR      LT21B
2705  006432  020102          LT21A:  CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2706  006434  001402                          BEQ     LT21B           ;IF NOT: BR
2707  006436  004767  013776                  JSR     PC,LTGER3       ;ELSE GO PRINT ERROR
2708  006442  004767  015424          LT21B:  JSR     PC,ITER         ;GO SEE IF ITERATION
2709  006446  012703  040000                  MOV     #40000,R3
2710  006452  005303          LT21XA: DEC     R3              ;DELAY FOR ALPHA
2711  006454  001376                          BNE     LT21XA
2712  006456  004767  013560                  JSR     PC,EORPA        ;GO DO EOR CLEAR
2713  006462  004767  014442                  JSR     PC,DRVCLR
2714  006466  000167  173760                  JMP     TSCD2           ;RETURN TO SCHED
```

```
2715
2716                                        ;LOGIC TEST 22: CONTROL BUS PARITY (CPAR)**********
2717
2718  006472  012767  031565  172132  LT22:   MOV     #MSLT22,EMADDR  ;SET TEST HEADER
2719  006500  012767  006506  172214          MOV     #LT22IT,SCOLP   ;SET SCOPE LOOP ADDRESS
2720  006506  004767  015442          LT22IT: JSR     PC,INIT1        ;INIT, SELECT SLAVE+DRIVE
2721  006512  052777  000020  172000          BIS     #20,@CS         ;ENABLE EVEN PARITY ON MB
2722  006520  012777  177777  171770          MOV     #-1,@FC         ;WRITE TO FC
2723  006526  012701  000010                  MOV     #10,R1          ;SET TEST WORD
2724  006532  042777  000020  171760          BIC     #20,@CS         ;RESET PARITY TO ODD
2725  006540  017702  171760                  MOV     @ER,R2          ;GET ER
2726  006544  030102                          BIT     R1,R2           ;SEE IF EXPT=RCVD
2727  006546  001011                          BNE     LT22A           ;IF SO: BR
2728  006550  012767  034625  172124          MOV     #TMS20,ERADD    ;SET ERROR CODE
2729  006556  012767  000001  172142          MOV     #1,EXFL         ;SET EXPT FLG
2730  006564  004767  013662                  JSR     PC,LTGER0       ;GO PRINT ERROR
2731  006570  000404                          BR      LT22X
2732  006572  020102          LT22A:  CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2733  006574  001402                          BEQ     LT22X           ;IF NOT: BR
2734  006576  004767  013636                  JSR     PC,LTGER3       ;ELSE GO PRINT ERROR
2735  006602  004767  015264          LT22X:  JSR     PC,ITER         ;GO SEE IF ITERATION
2736  006606  004767  014316                  JSR     PC,DRVCLR
2737  006612  000167  173634                  JMP     TSCD2           ;RETURN TO SCHED
```

```
2738
2739                                        ;LOGIC TEST 23: FORMAT ERROR(FMT)**********
2740
2741  006616  012767  031622  172006  LT23:   MOV     #MSLT23,EMADDR  ;SET TEST HEADER
2742  006624  012767  006632  172070          MOV     #LT23IT,SCOLP   ;SET SCOPE ADDRESS
2743  006632  004767  015316          LT23IT: JSR     PC,INIT1        ;GO INIT SELECT DRIVE+SLAVE
2744  006636  042777  000360  171676          BIC     #360,@TC        ;SET ILLEGAL FORMAT
2745  006644  012701  000020                  MOV     #20,R1          ;SET TEST WORD
2746  006650  012777  000015  171656          MOV     #15,@MR         ;SET WAM 3
2747  006656  012777  000071  171624          MOV     #71,@C1         ;SET READ+GO
2748  006664  017702  171634                  MOV     @ER,R2          ;READ ER
2749  006670  030102                          BIT     R1,R2           ;SEE IF EXPT=RCVD
2750  006672  001011                          BNE     LT23A           ;IF SO: BR
2751  006674  012767  034634  172000          MOV     #TMS21,ERADD    ;SET ERROR CODE
2752  006702  012767  000001  172016          MOV     #1,EXFL         ;SET EXPT FLG
2753  006710  004767  013536                  JSR     PC,LTGERD       ;GO PRINT ERROR
2754  006714  000404                          BR      LT23X
2755  006716  020102          LT23A:  CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2756  006720  001402                          BEQ     LT23X           ;IF NOT: BR
2757  006722  004767  013512                  JSR     PC,LTGER3       ;ELSE GO PRINT ERROR
2758  006726  004767  015140          LT23X:  JSR     PC,ITER         ;GO SEE IF ITERATION
2759  006732  004767  013304                  JSR     PC,EORPA
2760  006736  004767  014166                  JSR     PC,DRVCLR
2761  006742  000167  173504                  JMP     TSCD2           ;RETURN TO SCHED
```

```
2762                                                ;LOGIC TEST 24:  DATA BUS PARITY ERROR(DPAR)**********
2763
2764  006746  012767  031664  171656  LT24:     MOV     #MSLT24,EMADDR  ;SET TEST HEADER
2765  006754  012767  006762  171740            MOV     #LT24IT,SCOLP   ;SET SCOPE ADDRESS
2766  006762  012767  000005  171620  LT24IT:   MOV     #5,ITAMT
2767  006770  004767  015160                    JSR     PC,INIT1        ;GO INIT, SELECT DRIVE+SLAVE
2768  006774  052777  000300  171540            BIS     #300,@TC        ;SET NORMAL FORMAT
2769  007002  012777  035050  171504            MOV     #WDATA,@BA      ;SET BA
2770  007010  012777  177760  171500            MOV     #-20,@FC        ;SET FC
2771  007016  012777  177770  171466            MOV     #-10,@WC        ;SET WC
2772  007024  012777  000013  171502            MOV     #13,@MR         ;SELECT WAM 2
2773  007032  012777  000061  171450            MOV     #61,@C1         ;SET WRITE+GO
2774  007040  052777  000020  171452            BIS     #20,@CS         ;FORCE EVEN PARITY
2775  007046  012701  000040                    MOV     #40,R1          ;SET TEST WORD
2776  007052  012703  000004                    MOV     #4,R3
2777  007056  005000                            CLR     R0
2778  007060  005300                  LT24A:    DEC     R0
2779  007062  001376                            BNE     LT24A           ;DELAY
2780  007064  005303                            DEC     R3
2781  007066  001374                            BNE     LT24A
2782  007070  012700  000004                    MOV     #4,R0
2783  007074  012777  000013  171432  LT24B:    MOV     #13,@MR         ;CLOCK MR 4 TIMES
2784  007102  005300                            DEC     R0
2785  007104  022700  000002                    CMP     #2,R0           ;SEE IF DONE 1 BYTE
2786  007110  001002                            BNE     LT24B0          ;IF NOT: BR
2787  007112  017701  171416                    MOV     @MR,R1          ;ELSE GET BYTE 1
2788  007116  005700                  LT24B0:   TST     R0              ;SEE IF BYTE 2
2789  007120  001365                            BNE     LT24B           ;IF NOT: BR
2790  007122  017704  171406                    MOV     @MR,R4          ;GET BYTE 2
2791  007126  005000                            CLR     R0
2792  007130  005300                  LT24C:    DEC     R0
2793  007132  001376                            BNE     LT24C           ;DELAY
2794  007134  032777  000040  171362            BIT     #40,@ER         ;SEE IF DPAR IS SET
2795  007142  001023                            BNE     LT24D           ;IF SO: BR
2796  007144  000301                            SWAB    R1
2797  007146  042701  177400                    BIC     #177400,R1      ;GET LOW BYTE
2798  007152  042704  000377                    BIC     #377,R4
2799  007156  050401                            BIS     R4,R1           ;GET HIGH BYTE
2800  007160  005267  171570                    INC     T24FL           ;SET T24 FLAG
2801  007164  012767  034642  171510            MOV     #TMS22,ERADD    ;SET ERROR CODE
2802  007172  012767  000001  171526            MOV     #1,EXFL         ;SET EXPT FLG
2803  007200  004767  013246                    JSR     PC,LTGER0       ;GO PRINT ERROR
2804  007204  005067  171544                    CLR     T24FL           ;CLEAR FLAG
2805  007210  000412                            BR      LT24X
2806  007212  012701  000050          LT24D:    MOV     #50,R1
2807  007216  017702  171302                    MOV     @ER,R2          ;GET ERROR REGISTER
2808  007222  042702  020000                    BIC     #20000,R2       ;MASK OPI
2809  007226  020102                            CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2810  007230  001402                            BEQ     LT24X           ;IF NOT: BR
2811  007232  004767  013202                    JSR     PC,LTGER3       ;ELSE GO PRINT ERROR
2812  007236  042777  000020  171254  LT24X:    BIC     #20,@CS         ;RESET EVEN PARITY
2813  007244  004767  012772                    JSR     PC,EORPA        ;GO DO EOR CLEAR
2814  007250  004767  013654                    JSR     PC,DRVCLR       ;GO SEE IF DRIVE CLEAR OK
2815  007254  004767  014612                    JSR     PC,ITER         ;GO SEE IF ITERATION
2816  007260  012767  000020  171322            MOV     #20,ITAMT
2817  007266  000167  173160                    JMP     TSCD2           ;RETURN TO SCHED
```

```
2818
2819                                        ;LOGIC TEST 25:  NON-EXECUTABLE FUNCTION(NEF)**********
2820
2821  007272  012767  031724  171332  LT25:   MOV     #MSLT25,EMADDR  ;SET TEST HEADER
2822  007300  012767  007306  171414          MOV     #LT25IT,SCOLP   ;SET LOOP ADDRESS
2823  007306  004767  014642          LT25IT: JSR     PC,INIT1        ;INIT, SELECT DRIVE+SLAVE
2824  007312  052777  000300  171222          BIS     #300,@TC        ;SET NORMAL FORMAT
2825  007320  012777  177777  171170          MOV     #-1,@FC         ;SET ITLLEGAL FC
2826  007326  012777  000013  171200          MOV     #13,@MR         ;SET WAM 2
2827  007334  012777  000061  171146          MOV     #61,@C1         ;LOAD WRITE+GO
2828  007342  012701  004000                  MOV     #4000,R1        ;SET TEST WORD
2829  007346  017702  171152                  MOV     @ER,R2          ;GET ER
2830  007352  030102                          BIT     R1,R2           ;SEE IF EXPT=RCVD
2831  007354  001011                          BNE     LT25A           ;IF SO: BR
2832  007356  012767  034730  171316          MOV     #TMS31,ERADD    ;SET ERROR CODE
2833  007364  012767  000001  171334          MOV     #1,EXFL         ;SET EXPT FLAG
2834  007372  004767  013054                  JSR     PC,LTGER0       ;GO PRINT ERROR
2835  007376  000404                          BR      LT25X
2836  007400  020102          LT25A:  CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2837  007402  001402                          BEQ     LT25X           ;IF NOT: BR
2838  007404  004767  013030                  JSR     PC,LTGER3       ;ELSE GO PRINT ERROR
2839  007410  004767  014456          LT25X:  JSR     PC,ITER         ;GO SEE IF ITERATION
2840  007414  004767  013510                  JSR     PC,DRVCLR
2841  007420  000167  173026                  JMP     TSCD2           ;RETURN TO SCHED
```

```
2842
2843                                        ;LOGIC TEST 26: FRAME COUNT ERROR(FCE)**********
2844
2845  007424  012767  031760  171200  LT26:    MOV     #MSLT26,EMADDR  ;SET TEST HEADER
2846  007432  004767  014516          LT26IT:  JSR     PC,INIT1        ;INIT, SELECT DRIVE+SLAVE
2847  007436  005000                           CLR     R0
2848  007440  005300                  LT26W:   DEC     R0
2849  007442  001376                           BNE     LT26W           ;AWAIT OPI RESET
2850  007444  052777  000300  171070           BIS     #300,@TC        ;SET NORMAL FORMAT
2851  007452  012777  177770  171032           MOV     #-10,@WC        ;SET WC=-10
2852  007460  012777  177760  171030           MOV     #-20,@FC        ;SET FC=-20
2853  007466  012777  000013  171040           MOV     #13,@MR         ;SET WAM 3
2854  007474  012777  000061  171006           MOV     #61,@C1         ;LOAD WRITE+GO
2855  007502  012701  001000                   MOV     #1000,R1        ;SET TEST WORD
2856  007506  005000                           CLR     R0
2857  007510  005300                  LT26A:   DEC     R0
2858  007512  001376                           BNE     LT26A           ;DELAY
2859  007514  012777  000025  171012           MOV     #25,@MR         ;LOAD MM EOR CLEAR
2860  007522  105077  171006                   CLRB    @MR             ;RESET MR
2861  007526  012703  000004                   MOV     #4,R3
2862  007532  005000                           CLR     R0
2863  007534  032777  001000  170762  LT26B:   BIT     #1000,@ER       ;SEE IF FCE SET
2864  007542  001022                           BNE     LT26C           ;IF SO: BR
2865  007544  005300                           DEC     R0
2866  007546  001372                           BNE     LT26B           ;DELAY
2867  007550  005303                           DEC     R3
2868  007552  001370                           BNE     LT26B
2869  007554  017702  170744                   MOV     @ER,R2          ;GET ER
2870  007560  012767  007432  171134           MOV     #LT26IT,SCOLP   ;SET SCOPE ADDRESS
2871  007566  012767  034707  171106           MOV     #TMS28,ERADD
2872  007574  012767  000001  171124           MOV     #1,EXFL         ;SET EXPT FLG
2873  007602  004767  012644                   JSR     PC,LTGER0       ;GO PRINT ERROR
2874  007606  000406                           BR      LT26X
2875  007610  017702  170710          LT26C:   MOV     @ER,R2          ;GET ERROR REGISTER
2876  007614  020102                           CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2877  007616  001402                           BEQ     LT26X           ;IF NOT: BR
2878  007620  004767  012614                   JSR     PC,LTGER3       ;ELSE GO PRINT ERROR
2879  007624  004767  014242          LT26X:   JSR     PC,ITER         ;GO SEE IF ITERATION
2880  007630  004767  013274                   JSR     PC,DRVCLR
2881  007634  000167  172612                   JMP     TSCD2           ;RETUPN TO SCHED
```

```
2882
2883                                        ;LOGIC TEST 27:  ILLEGAL REGISTER(ILR)**********
2884
2885  007640  022767  172400  170642  LT27:   CMP     #172400,C1      ;SEE IF ADDRESSES OPEN
2886  007646  001041                          BNE     LT27XX          ;IF NOT: BR
2887  007650  012767  007674  171044          MOV     #LT27A,SCOLP    ;SET SCOPE ADDRESS
2888  007656  012767  032014  170746          MOV     #MSLT27,EMADDR  ;SET TEST HEADER
2889  007664  012700  000020          LT27IT: MOV     #20,R0          ;SET NUMBER OF ILR TESTS
2890  007670  012701  172434                  MOV     #172434,R1      ;SET FIRST ILR ADDRESS
2891  007674  004767  014254          LT27A:  JSR     PC,INIT1        ;GO INIT, SELECT DRIVE+SLAVE
2892  007700  011103                          MOV     (R1),R3         ;ATTEMPT ILR READ
2893  007702  032777  000002  170614          BIT     #2,@ER          ;SEE IF ILR=1
2894  007710  001010                          BNE     LT27B           ;IF SO: BR
2895  007712  012767  000001  171006          MOV     #1,EXFL         ;SET EXPT-NOT RCVD FLAG
2896  007720  012767  034531  170754          MOV     #TMS10,ERADD    ;SET ERROR CODE
2897  007726  004767  012526                  JSR     PC,LTGER        ;GO PRINT ERROR
2898  007732  005300                  LT27B:  DEC     R0              ;SEE IF DONE ALL
2899  007734  001402                          BEQ     LT27X           ;IF SO: BR
2900  007736  005721                          TST     (R1)+           ;BUMP ADDRESS
2901  007740  000755                          BR      LT27A           ;CONTINUE TESTS
2902  007742  004767  014124          LT27X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
2903  007746  004767  013156                  JSR     PC,DRVCLR
2904  007752  000167  172474          LT27XX: JMP     TSCD2           ;RETURN TO SCHED
```

```
2905
2906                                        ;LOGIC TEST 30: DRIVE T!MING ERROR**********
2907
2908  007756  012767  034736  170716  LT30:   MOV     #TMS32,ERADD    ;SET ERROR CODE
2909  007764  012767  032050  170640          MOV     #MSLT30,EMADDR  ;SET TEST HEADER
2910  007772  012767  010000  170722          MOV     #LT30IT,SCOLP   ;SET SCOPE ADDRESS
2911  010000  004767  014150          LT30IT: JSR     PC,INIT1        ;INIT, SELECT DRIVE + SLAVE
2912  010004  052777  000300  170530          BIS     #300,@TC        ;SET NORMAL FORMAT
2913  010012  012701  010000                  MOV     #10000,R1       ;SET TEST WORD
2914  010016  012777  000017  170510          MOV     #17,@MR         ;CRIPPLE OCCUPIED
2915  010024  005077  170466                  CLR     @FC             ;SET FC3
2916  010030  012777  000061  170452          MOV     #61,@C1         ;LOAD WRITE+GO
2917  010036  032777  010000  170460          BIT     #10000,@ER      ;SEE IF DTE SET
2918  010044  001005                          BNE     LT30A           ;IF SO: BR
2919  010046  012767  000001  170652          MOV     #1,EXFL         ;SET EXPT FLG
2920  010054  004767  012372                  JSR     PC,LTGERO       ;GO PRINT ERROR
2921  010060  004767  014070          LT30A:  JSR     PC,INIT1        ;GO INIT SELECT DRIVE,SLAVE
2922  010064  052777  000300  170450          BIS     #300,@TC        ;SET FORMAT
2923  010072  012701  010000                  MOV     #10000,R1       ;SET TEST WORD
2924  010076  005077  170414                  CLR     @FC             ;SET FCS
2925  010102  012777  000015  170424          MOV     #15,@MR         ;SET WRAP 3
2926  010110  012777  000061  170372          MOV     #61,@C1         ;LOAD WRITE+GO
2927  010116  012704  040000                  MOV     #40000,R4
2928  010122  005777  170414          LT30B:  TST     @TC             ;SEE IF ALPHA
2929  010126  100015                          BPL     LT30C           ;AWAIT ALPHA
2930  010130  005300                          DEC     R0
2931  010132  001373                          BNE     LT30B
2932  010134  016704  170472                  MOV     EMADDR,R4
2933  010140  004767  014352                  JSR     PC,TTOUT        ;PRINT HEADER
2934  010144  012704  030112                  MOV     #MSG50,R4
2935  010150  004767  014342                  JSR     PC,TTOUT        ;PRINT ALPHA ERROR
2936  010154  004767  013660                  JSR     PC,SCOPE
2937  010160  000435                          BR      LT30X
2938  010162  012777  000015  170344  LT30C:  MOV     #15,@MR         ;CLOCK MR
2939  010170  012777  000015  170336          MOV     #15,@MR         ;CLOCK MR
2940  010176  005000                          CLR     R0
2941  010200  005300                  LT30D:  DEC     R0
2942  010202  001376                          BNE     LT30D           ;DELAY
2943  010204  032777  010000  170312          BIT     #10000,@ER      ;SEE IF DTE SET
2944  010212  001006                          BNE     LT30E           ;IF SO: BR
2945  010214  012767  000001  170504          MOV     #1,EXFL         ;SET EXPT FLG
2946  010222  004767  012224                  JSR     PC,LTGERO       ;GO PRINT ERROR
2947  010226  000412                          BR      LT30X
2948  010230  012701  010000          LT30E:  MOV     #10000,R1       ;SET TEST WORD
2949  010234  017702  170264                  MOV     @ER,R2          ;GET ERROR REGISTER
2950  010240  042702  020000                  BIC     #20000,R2       ;MASK OPI
2951  010244  020102                          CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2952  010246  001402                          BEQ     LT30X           ;IF NOT: BR
2953  010250  004767  012164                  JSR     PC,LTGER3       ;ELSE GO PRINT ERROR
2954  010254  004767  013612          LT30X:  JSR     PC,ITER         ;GO SEE IF ITERATION
2955  010260  004767  011756                  JSR     PC,EORPA        ;GO CLEAR GO BIT
2956  010264  004767  012640                  JSR     PC,DRVCLR
2957  010270  000167  172156                  JMP     TSCD2           ;RETURN TO SCHED
2958
```

```
2959
2960                                        ;LOGIC TEST 31: OPERATION INCOMPLETE(OPI)**********
2961
2962  010274  012767  032106  170330  LT31:   MOV     #MSLT31,EMADDR  ;SET TEST HEADER
2963  010302  012767  010310  170412          MOV     #LT31IT,SCOLP   ;SET SCOPE ADDRESS
2964  010310  012767  000005  170272  LT31IT: MOV     #5,ITAMT        ;SET REDUCED ITER COUNT
2965  010316  004767  013632                  JSR     PC,INIT1        ;INIT, SELECT DRIVE+SLAVE
2966  010322  005000                          CLR     R0
2967  010324  005300                  LT31W:  DEC     R0
2968  010326  001376                          BNE     LT31W           ;AWAIT OPI RESET
2969  010330  052777  000300  170204          BIS     #300,@TC        ;SET FORMAT
2970  010336  012777  000013  170170          MOV     #13,@MR         ;SET WAM 2
2971  010344  005077  170146                  CLR     @FC             ;SET FCS
2972  010350  012777  000061  170132          MOV     #61,@C1         ;LOAD WRITE+GO
2973  010356  012701  020000                  MOV     #20000,R1       ;SET TEST WORD
2974  010362  012703  000004                  MOV     #4,R3
2975  010366  005000                          CLR     R0
2976  010370  032777  020000  170126  LT31A:  BIT     #20000,@ER      ;SEE IF OPI SET
2977  010376  001015                          BNE     LT31B           ;IF SO: BR
2978  010400  005300                          DEC     R0
2979  010402  001372                          BNE     LT31A           ;DELAY
2980  010404  005303                          DEC     R3
2981  010406  001370                          BNE     LT31A
2982  010410  012767  034752  170264          MOV     #TMS33A,ERADD   ;SET ERROR CODE
2983  010416  012767  000001  170302          MOV     #1,EXFL         ;SET EXPT FLG
2984  010424  004767  012022                  JSR     PC,LTGER0       ;GO PRINT ERROR
2985  010430  000464                          BR      LT31X
2986  010432  017702  170066          LT31B:  MOV     @ER,R2          ;GET ERROR REGISTER
2987  010436  020102                          CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2988  010440  001403                          BEQ     LT31C           ;IF NOT: BR
2989  010442  004767  011772                  JSR     PC,LTGER3       ;ELSE PRINT ERROR
2990  010446  000455                          BR      LT31X
2991  010450  004767  013500          LT31C:  JSR     PC,INIT1        ;GO INIT
2992  010454  005000                          CLR     R0
2993  010456  005300                  LT31W1: DEC     R0
2994  010460  001376                          BNE     LT31W1          ;AWAIT OPI RESET
2995  010462  052777  000300  170052          BIS     #300,@TC        ;SET FORMAT
2996  010470  012777  000015  170036          MOV     #15,@MR         ;SET WRAP 3
2997  010476  012777  000071  170004          MOV     #71,@C1         ;LOAD READ+GO
2998  010504  012701  020000                  MOV     #20000,R1       ;SET TEST WORD
2999  010510  012703  000100                  MOV     #100,R3
3000  010514  005000                          CLR     R0
3001  010516  032777  020000  170000  LT31D:  BIT     #20000,@ER      ;SEE IF OPI SET
3002  010524  001020                          BNE     LT31E           ;IF SO: BR
3003  010526  005300                          DEC     R0
3004  010530  001372                          BNE     LT31D           ;DELAY
3005  010532  005303                          DEC     R3
3006  010534  001370                          BNE     LT31D
3007  010536  012767  010450  170156          MOV     #LT31C,SCOLP    ;SET SCOPE ADDRESS
3008  010544  012767  034766  170130          MOV     #TMS33B,ERADD   ;SET ERROR CODE
3009  010552  012767  000001  170146          MOV     #1,EXFL         ;SET EXPT FLG
3010  010560  004767  011666                  JSR     PC,LTGER0       ;GO PRINT ERROR
3011  010564  000406                          BR      LT31X
3012  010566  017702  167732          LT31E:  MOV     @ER,R2          ;GET ERROR REGISTER
3013  010572  020102                          CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
3014  010574  001402                          BEQ     LT31X           ;IF NOT: BR
```

```
 3015  010576  004767  011636                    JSR     PC,LTGER3       ;ELSE PRINT ERROR
 3016  010602  004767  013264          LT31X:    JSR     PC,ITER         ;GO SEE IF ITERATIONS
 3017  010606  004767  012316                    JSR     PC,DRVCLR
 3018  010612  012767  000020  167770            MOV     #20,ITAMT
 3019  010620  000167  171626                    JMP     TSCD2           ;RETURN TO SCHED
```

```
3020
3021                                        ;LOGIC TEST 32: UNSAFE(UNS)**********
3022
3023  010624  012767  032142  170000  LT32:   MOV     #MSLT32,EMADDR  ;SET TEST HEADER
3024  010632  012767  010640  170062          MOV     #LT321T,SCOLP   ;SET SCOPE ADDRESS
3025  010640  004767  013310          LT321T: JSR     PC,INIT1        ;INIT, SELECT DRIVE +SLAVE
3026  010644  016700  170024                  MOV     SLVN,R0         ;GET SLAVE NUMBER
3027  010650  005100                          COM     R0              ;SET NONEXISTANT SLAVE
3028  010652  042700  177770                  BIC     #177770,R0      ;MASK SLAVE NUMBER
3029  010656  052700  000300                  BIS     #300,R0         ;SET FORMAT
3030  010662  010077  167654                  MOV     R0,@TC          ;SELECT ILLEGAL SLAVE
3031  010666  012777  000071  167614          MOV     #71,@C1         ;LOAD READ+GO
3032  010674  012701  040000                  MOV     #40000,R1       ;SET TEST WORD
3033  010700  017702  167620                  MOV     @ER,R2          ;READ ER
3034  010704  030102                          BIT     R1,R2           ;SEE IF EXPT=RCVD
3035  010706  001011                          BNE     LT32A           ;IF SO: BR
3036  010710  012767  035001  167764          MOV     #TMS34,ERADD    ;SET ERROR CODE
3037  010716  012767  000001  170002          MOV     #1,EXFL         ;SET ERROR CODE
3038  010724  004767  011522                  JSR     PC,LTGER0       ;GO PRINT ERROR
3039  010730  000404                          BR      LT32X
3040  010732  020102          LT32A:  CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
3041  010734  001402                          BEQ     LT32X           ;IF NOT: BR
3042  010736  004767  011476                  JSR     PC,LTGER3       ;ELSE PRINT ERROR
3043  010742  004767  013124          LT32X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
3044  010746  004767  012156                  JSR     PC,DRVCLR
3045  010752  000167  171474                  JMP     TSCD2           ;RETURN TO SCHED
```

```
3046
3047                                    ;THE FOLLOWING 6 TESTS WILL LOOK AT VARIOUS BITS IN THE
3048                                    ;DRIVE STATUS(DS) AND TAPE CONTROL(TC)
3049                                    ;REGISTERS BY FORCING CERTAIN CONDITONS WHICH DO NOT
3050                                    ;REQUIRE TAPE MOVEMENT.
3051
3052                                    ;LOGIC TEST 33: POSITIONING IN PROGRESS(PIP)**********
3053
3054  010756  012767  032176  167646  LT33:   MOV     #MSLT33,EMADDR  ;SET TEST HEADER
3055  010764  012767  010772  167730          MOV     #LT331T,SCOLP   ;SET SCOPE ADDRESS
3056  010772  004767  013156          LT331T: JSR     PC,INIT1        ;INIT, SELECT DRIVE+SLAVE
3057  010776  012777  000013  167530          MOV     #13,@MR         ;SET WAM 2
3058  011004  012777  177777  167504          MOV     #-1,@FC         ;SET FCS
3059  011012  012777  000031  167470          MOV     #31,@C1         ;LOAD SPACE FORWARD+GO
3060  011020  032777  020000  167474          BIT     #20000,@DS      ;SEE IF PIP=1
3061  011026  001010                          BNE     LT33X           ;IF SO: BR
3062  011030  012767  034561  167644          MOV     #TMS14,ERADD    ;SET ERROR CODE
3063  011036  012767  000001  167662          MOV     #1,EXFL         ;SET ERROR CODE
3064  011044  004767  011402                  JSR     PC,LTGERO       ;GO PRINT ERROR
3065  011050  004767  013016          LT33X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
3066  011054  000167  171372                  JMP     TSCD2           ;RETURN TO SCHED
```

```
3067
3068                                        ;LOGIC TEST 34:  PHASE ENCODED STATUS(PES)********
3069
3070  011060  005767  167606        LT34:   TST     NRZOF           ;SEE IF NRZ ONLY
3071  011064  001054                 LT34XX  BNE     LT34XX          ;IF SO:  BR
3072  011066  012767  034501  167606        MOV     #TMS6,ERADD     ;SET ERROR CODE
3073  011074  012767  032232  167530        MOV     #MSLT34,EMADDR  ;SET TEST HEADER
3074  011102  012700  000004        LT34IT: MOV     #4,R0
3075  011106  004767  013042        LT34A1: JSR     PC,INIT1        ;GO INIT, SELECT DRIVE+SLAVE
3076  011112  042777  003400  167422        BIC     #3400,@TC       ;SELECT NRZI
3077  011120  032777  000040  167374  LT34A: BIT     #40,@DS         ;SEE IF PES=0
3078  011126  001410                 LT34B   BEQ     LT34B           ;IF SO:  BR
3079  011130  012767  000002  167570        MOV     #2,EXFL         ;SET RCVD-NOT EXPT
3080  011136  012767  011106  167556        MOV     #LT34A1,SCOLP   ;SET SCOPE ADDRESS
3081  011144  004767  011302                 JSR     PC,LTGERO       ;GO PRINT ERROR
3082  011150  062777  000400  167364  LT34B: ADD     #400,@TC        ;BUMP DENSITY
3083  011156  005300                 LT34C   DEC     R0              ;SEE IF DONE ALL NRZI
3084  011160  001357                 LT34X   BNE     LT34A           ;IF NOT:  BR
3085  011162  032777  000040  167332  LT34C: BIT     #40,@DS         ;SEE IF PES=1
3086  011170  001010                 LT34XX  BNE     LT34X           ;IF SO:  BR
3087  011172  012767  011162  167522        MOV     #LT34C,SCOLP    ;SET SCOPE ADDRESS
3088  011200  012767  000001  167520        MOV     #1,EXFL         ;SET EXPT-NOT RCVD FLAG
3089  011206  004767  011240                 JSR     PC,LTGERO       ;GO PRINT ERROR
3090  011212  004767  012654        LT34X:  JSR     PC,ITER         ;GO SEE IF ITERATION
3091  011216  000167  171230        LT34XX: JMP     TSCD2           ;RETURN TO SCHED
```

```
3092
3093                                        ;LOGIC TEST 35: TAPE CONTROL WRITE(TCW)**********
3094
3095  011222  012767  035024  167452  LT35:   MOV   #TMS37,ERADD
3096  011230  012767  032266  167374          MOV   #MSLT35,EMADDR
3097  011236  004767  012712          LT35IT: JSR   PC,INIT1          ;INIT SELECT DRIVE, SLAVE
3098  011242  032777  000020  167252  1$:     BIT   #20,@DS           ;SEE IF SDWN IS RESET
3099  011250  001374                        BNE   1$                ;IF NOT: BR
3100  011252  052777  000300  167262        BIS   #300,@TC          ;SET FORMAT
3101  011260  012777  000015  167246        MOV   #15,@MR           ;SET WAM 3
3102  011266  012777  000071  167214        MOV   #71,@C1           ;LOAD READ+GO
3103  011274  032777  020000  167240        BIT   #20000,@TC        ;SEE IF TCW=0
3104  011302  001410                        BEQ   LT35A             ;IF SO: BR
3105  011304  012767  000002  167414        MOV   #2,EXFL           ;SET RCV-NOT EXPT FLAG
3106  011312  012767  011236  167402        MOV   #LT35IT,SCOLP     ;SET SCOPE ADDRESS
3107  011320  004767  011126                JSR   PC,LTGERO         ;GO PRINT ERROR
3108  011324  004767  012624          LT35A: JSR   PC,INIT1          ;INIT
3109  011330  005077  167206                CLR   @TC               ;WRITE TO TC
3110  011334  032777  020000  167200        BIT   #20000,@TC        ;SEE IF TCW=1
3111  011342  001010                        BNE   LT35X             ;IF SO: BR
3112  011344  012767  011324  167350        MOV   #LT35A,SCOLP      ;SET SCOPE ADDRESS
3113  011352  012767  000001  167346        MOV   #1,EXFL           ;SE EXPT-NOT RCVD FLAG
3114  011360  004767  011066                JSR   PC,LTGERO         ;GO PRINT ERROR
3115  011364  004767  012502          LT35X: JSR   PC.ITER
3116  011370  000167  171056                JMP   TSCD2             ;RETURN TO SCHED
```

```
3117
3118                                        ;LOGIC TEST 36: FRAME COUNTER STATUS(FCS)**********
3119
3120  011374  012767  032330  167230  LT36:   MOV     #MSLT36,EMADDR
3121  011402  012767  035032  167272          MOV     #TMS38,ERADD      ;SET ERROR CODE
3122  011410  004767  012540          LT361T: JSR     PC,INIT1          ;INIT, SELECT DRIVE+SLAVE
3123  011414  032777  040000  167120          BIT     #40000,@TC        ;SEE IF FCS=0
3124  011422  001410                          BEQ     LT36A             ;IF SO: BR
3125  011424  012767  011410  167270          MOV     #LT361T,SCOLP     ;SET SCOPE ADDRESS
3126  011432  012767  000002  167266          MOV     #2,EXFL           ;SET RCVD-NOT EXPT
3127  011440  004767  011006                  JSR     PC,LTGERO         ;GO PRINT ERROR
3128  011444  004767  012504          LT36A:  JSR     PC,INIT1          ;INIT
3129  011450  005077  167042                  CLR     @FC               ;WRITE TO FC
3130  011454  032777  040000  167060          BIT     #40000,@TC        ;SEE IF FCS=1
3131  011462  001010                          BNE     LT36X             ;IF SO: BR
3132  011464  012767  011444  167230          MOV     #LT36A,SCOLP      ;SET SCOPE ADDRESS
3133  011472  012767  000001  167226          MOV     #1,EXFL           ;SET EXPT-NOT RCVD
3134  011500  004767  010746                  JSR     PC,LTGERO         ;GO PRINT ERROR
3135  011504' 004767  012362          LT36X:  JSR     PC,ITER
3136  011510  000167  170736                  JMP     TSCD2             ;RETURN TO SCHED
```

```
3137
3138                                        ;LOGIC TEST 37: ACCELERATION(ACCL)**********
3139
3140  011514  012767  032372  167110  LT37:   MOV     #MSLT37,EMADDR
3141  011522  012767  035040  167152          MOV     #TMS39,ERADD      ;SET ERROR CODE
3142  011530  004767  012420          LT371T: JSR     PC,INIT1          ;INIT, SELECT DRIVE+SLAVE
3143  011534  052777  000300  167000          BIS     #300,@TC          ;SET FORMAT
3144  011542  005777  166774                  TST     @TC               ;SEE IF ACCL=1
3145  011546  100410                          BMI     LT37A             ;IF SO: BR
3146  011550  012767  000001  167150          MOV     #1,EXFL
3147  011556  012767  011530  167136          MOV     #LT371T,SCOLP     ;SET SCOPE ADDRESS
3148  011564  004767  010662                  JSR     PC,LTGERO         ;GO PRINT ERROR
3149  011570  004767  012360          LT37A:  JSR     PC,INIT1          ;INIT
3150  011574  052777  000300  166740          BIS     #300,@TC          ;SET FORMAT
3151  011602  012777  000015  166724          MOV     #15,@MR           ;SET WAM 3
3152  011610  012777  000071  166672          MOV     #71,@C1           ;LOAD READ+GO
3153  011616  012700  100000                  MOV     #100000,R0        ;SET ACCL DELAY
3154  011622  005777  166714          LT37B:  TST     @TC               ;SEE IF ACCL=0
3155  011626  100012                          BPL     LT37X             ;IF SO: BR
3156  011630  005300                          DEC     R0
3157  011632  001373                          BNE     LT37B             ;DELAY
3158  011634  012767  011570  167060          MOV     #LT37A,SCOLP      ;SET SCOPE ADDRESS
3159  011642  012767  000002  167056          MOV     #2,EXFL
3160  011650  004767  010576                  JSR     PC,LTGERO         ;GO PRINT ERROR
3161  011654  004767  012212          LT37X:  JSR     PC,!TER
3162  011660  000167  170566                  JMP     TSCD2             ;RETURN TO SCHED
```

```
3163
3164                                        ;LOGIC TEST 40:  PE TAPE MARK (TM)**********
3165
3166  011664  005767  167002        LT40:   TST     NRZOF           ;SEE IF NRZ ONLY
3167  011670  001046                        BNE     LT40XX          ;IF SO:  BR
3168  011672  012767  011706  167022        MOV     #LT40IT,SCOLP   ;SET SCOPE ADDRESS
3169  011700  012767  032435  166724        MOV     #MSLT40,EMADDR
3170  011706  004767  012242        LT40IT: JSR     PC,INIT1        ;INIT, SELECT DRIVE+SLAVE
3171  011712  005000                        CLR     R0
3172  011714  005300                LT40W:  DEC     R0
3173  011716  001376                        BNE     LT40W           ;DELAY FOR OPI RESET
3174  011720  052777  002300  166614        BIS     #2300,@TC
3175  011726  012777  000007  166600        MOV     #7,@MR          ;SET WAM 0
3176  011734  012777  000027  166546        MOV     #27,@C1         ;LOAD WRITE TAPE MARK+GO
3177  011742  012700  100000                MOV     #100000,R0      ;SET DELAY
3178  011746  032777  000004  166546  LT40A: BIT     #4,@DS          ;SEE IF TM=1
3179  011754  001012                        BNE     LT40X           ;IF SO:  BR
3180  011756  005300                        DEC     R0
3181  011760  001372                        BNE     LT40A           ;DELAY
3182  011762  012767  034457  166712        MOV     #TMS3,ERADD
3183  011770  012767  000001  166730        MOV     #1,EXFL
3184  011776  004767  010450                JSR     PC,LTGERD       ;GO PRINT ERROR
3185  012002  004767  012064        LT40X:  JSR     PC,ITER
3186  012006  000167  170440        LT40XX: JMP     TSCD2           ;PETURN TO SCHED
```

```
3187
3188                                        ;LOGIC TEST 41:  NRZ TAPE MARK (TM,VPE,ITM)**********
3189
3190  012012  012767  012026  166702  LT41:   MOV     #LT411T,SCOLP   ;SET SCOPE ADDRESS
3191  012020  012767  032502  166604          MOV     #MSLT41,EMADDR
3192  012026  004767  012122          LT411T: JSR     PC,INIT1        ;INIT, SELECT DRIVE,SLAVE
3193  012032  004767  005226                  JSR     PC,BOTT         ;GO ASSURE NOT AT BOT
3194  012036  052777  001700  166476          BIS     #1700,@TC       ;SET NRZ+NORMAL FORMAT
3195  012044  012777  177760  166444          MOV     #-20,@FC        ;SET FCS
3196  012052  012777  000007  166454          MOV     #7,@MR          ;SET WAM 0
3197  012060  012777  000027  166422          MOV     #27,@C1         ;LOAD WRITE TAPE MARK+GO
3198  012066  005000                          CLR     R0
3199  012070  032777  000004  166424  LT41A:  BIT     #4,@DS          ;SEE IF TM=1
3200  012076  001012                          BNE     LT41B           ;IF SO: BR
3201  012100  005300                          DEC     R0
3202  012102  001372                          BNE     LT41A           ;DELAY
3203  012104  012767  034457  166570          MOV     #TMS3,ERADD     ;SET ERROR CODE
3204  012112  012767  000001  166606          MOV     #1,EXFL
3205  012120  004767  010326                  JSR     PC,LTGERO       ;GO PRINT ERROR
3206  012124  032777  002000  166372  LT41B:  BIT     #2000,@ER       ;SEE IF ITM=1
3207  012132  001010                          BNE     LT41C           ;IF SO: BR
3208  012134  012767  034722  166540          MOV     #TMS30,ERADD    ;SET ERROR CODE
3209  012142  012767  000001  166556          MOV     #1,EXFL
3210  012150  004767  010276                  JSR     PC,LTGERO       ;GO PRINT ERROR
3211  012154  032777  000100  166342  LT41C:  BIT     #100,@ER        ;SEE IF VPE=1
3212  012162  001011                          BNE     LT41D           ;IF SO: BR
3213  012164  012767  034707  166510          MOV     #TMS28,ERADD    ;SET ERROR CODE
3214  012172  012767  000001  166526          MOV     #1,EXFL
3215  012200  004767  010246                  JSR     PC,LTGERO       ;GO PRINT ERROR
3216  012204  000410                          BR      LT41X
3217  012206  012701  002100          LT41D:  MOV     #2100,R1        ;SET EXPT ERROR BITS
3218  012212  017702  166306                  MOV     @ER,R2          ;GET ERROR REGISTER
3219  012216  020102                          CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
3220  012220  001402                          BEQ     LT41X           ;IF NOT: BR
3221  012222  004767  010212                  JSR     PC,LTGER3       ;ELSE PRINT ERROR
3222  012226  005002          LT41X:  CLR     R2                      ;SET TIMER
3223  012230  032777  000200  166264  1$:     BIT     #200,@DS        ;SEE IF DRY SET
3224  012236  001002                          BNE     2$              ;IF SO: BR
3225  012240  005302                          DEC     R2              ;AWAIT DRY
3226  012242  001372                          BNE     1$              ;DELAY
3227  012244  004767  011622          2$:     JSR     PC,ITER         ;GO SEE IF ITERATIONS
3228  012250  004767  010654                  JSR     PC,DRVCLR       ;GO DO DRIVE CLEAR
3229  012254  000167  170172                  JMP     TSCD2           ;RETURN TO SCHED
```

```
                                        ;THE FOLLOWING 13 TESTS WILL CHECK DATA FORMATTING
                                        ;AND TRANSFER THROUGH THE TM02 WRAP AROUND MODES
                                        ;LOGIC TEST 42: WRAP 3, NRZ, NORMAL ODD *****
012260  012767  004270  166546  LT42:   MOV     #4270,WCS1      ;SET EXPT CS1
012266  012767  000100  166542          MOV     #100,WCS2       ;SET EXPT CS2
012274  012767  010600  166536          MOV     #10600,WDS      ;SET EXPT DS
012302  012767  000000  166532          MOV     #0,WER          ;SET EXPT ER
012310  012767  032551  166314          MOV     #MSLT42,EMADDR  ;SET HEADER
012316  012767  001700  166462          MOV     #1700,UDES      ;SET NRZ,NORMAL, ODD
012324  005067  166462          LT42A:  CLR     PATRN           ;POINT TO PATTERN 0
012330  012767  012336  166364          MOV     #LT42B,SCOLP    ;SET SCOPE ADDRESS
012336  004767  003706          LT42B:  JSR     PC,WAM3         ;GO DO WRAP 3
012342  005267  166444                  INC     PATRN           ;BUMP PATTERN POINTER
012346  032767  000004  166436          BIT     #4,PATRN        ;SEE IF DONE
012354  001770                          BEQ     LT42B           ;IF NOT: BR
012356  004767  011510                  JSR     PC,ITER         ;GO SEE IF ITERATIONS
012362  005067  166430                  CLR     RDRVF           ;CLEAR REVENUE FLAG
012366  000167  170060                  JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
3250
3251                                        ;LOGIC TEST 43: WRAP 3, PE, NORMAL, ODD*****
3252
3253  012372  005767  166274        LT43:   TST     NRZOF           ;SEE IF NRZ ONLY
3254  012376  001402                        BEQ     LT43A           ;IF NOT: BR
3255  012400  000167  170046                JMP     TSCD2           ;RETURN TO SCHED
3256  012404  012767  004270  166422  LT43A: MOV     #4270,WCS1      ;SET EXPT CS1
3257  012412  012767  000100  166416        MOV     #100,WCS2       ;SET EXPT CS2
3258  012420  012767  010640  166412        MOV     #10640,WDS      ;SET EXPT DS
3259  012426  012767  000000  166406        MOV     #0,WER          ;SET EXPT WER
3260  012434  012767  032620  166170        MOV     #MSLT43,EMADDR  ;SET HEADER
3261  012442  012767  002300  166336        MOV     #2300,UDES      ;SET PE, NORMAL, ODD
3262  012450  000167  177650                JMP     LT42A           ;EXECUTE TEST SEQUENCE
```

```
3263
3264                                        ;LOGIC TEST 44: WRAP 2, NRZ, NORMAL, ODD*****
3265
3266  012454  012767  004260  166352  LT44:   MOV     #4260,WCS1      ;SET EXPT CS1
3267  012462  012767  000100  166346          MOV     #100,WCS2       ;SET EXPT CS2
3268  012470  012767  010600  166342          MOV     #10600,WDS      ;SET EXPT DS
3269  012476  012767  000000  166336          MOV     #0,WER          ;SET EXPT WER
3270  012504  012767  032666  166120          MOV     #MSLT44,EMADDR  ;SET HEADER
3271  012512  012767  001700  166266          MOV     #1700,UDES      ;SET TO NRZ,NORMAL, ODD
3272  012520  005067  166266          LT44A:  CLR     PATRN           ;POINT TO PATTERN 0
3273  012524  012767  012532  166170          MOV     #LT44B,SCOLP    ;SET SCOPE ADDRESS
3274  012532  004767  003446          LT44B:  JSR     PC,WAM2         ;GO DO WRAP 2
3275  012536  005267  166250                  INC     PATRN           ;BUMP POINTER
3276  012542  032767  000004  166242          BIT     #4,PATRN        ;SEE IF DONE
3277  012550  001770                          BEQ     LT44B           ;IF NOT: BR
3278  012552  004767  011314                  JSR     PC,ITER         ;GO SEE IF ITERATIONS
3279  012556  000167  167670                  JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
3280
3281                                        ;LOGIC TEST 45: WRAP 2, PE, NORMAL, ODD*****
3282
3283  012562  005767  166104        LT45:   TST     NRZOF           ;SEE IF NRZ ONLY
3284  012566  001402                        BEQ     LT45A           ;IF NOT: BR
3285  012570  000167  167656                JMP     TSCD2           ;RETURN TO SCHED
3286  012574  012767  004260  166232  LT45A: MOV     #4260,WCS1      ;SET EXPT CS1
3287  012602  012767  000100  166226        MOV     #100,WCS2       ;SET EXPT CS2
3288  012610  012767  010640  166222        MOV     #10640,WDS      ;SET EXPT DS
3289  012616  012767  000000  166216        MOV     #0,WER          ;SET EXPT WER
3290  012624  012767  032735  166000        MOV     #MSLT45,EMADDR  ;SET HEADER
3291  012632  012767  002300  166146        MOV     #2300,UDES      ;SET PE, NORMAL, ODD
3292  012640  000167  177654                JMP     LT44A           ;GO EXECUTE TEST SEQUENCES
```

```
3293
3294                                        ;LOGIC TEST 46:  WRAP 1, NRZ, NORMAL, ODD*****
3295
3296  012644  012767  004260  166162  LT46:   MOV     #4260,WCS1      ;SET EXPT CS1
3297  012652  012767  000100  166156          MOV     #100,WCS2       ;SET EXPT CS2
3298  012660  012767  010600  166152          MOV     #10600,WDS      ;SET EXPT DS
3299  012666  012767  000000  166146          MOV     #0,WER          ;SET EXPT WER
3300  012674  012767  033003  165730          MOV     #MSLT46,EMADDR  ;SET HEADER
3301  012702  012767  001700  166076          MOV     #1700,UDES      ;SET NRZ, NORMAL, ODD
3302  012710  005067  166076          LT46A:  CLR     PATRN           ;POINT TO PATTERN ZERO
3303  012714  012767  012722  166000          MOV     #LT46B,SCOLP    ;SET SCOPE ADDRESS
3304  012722  004767  003244          LT46B:  JSR     PC,WAM1         ;GO DO WRAP 1
3305  012726  005267  166060                  INC     PATRN           ;BUMP POINTER
3306  012732  032767  000004  166052          BIT     #4,PATRN        ;SEE IF DONE
3307  012740  001770                          BEQ     LT46B           ;IF NOT: BR
3308  012742  004767  011124                  JSR     PC,ITER         ;GO SEE IF ITERATIONS
3309  012746  000167  167500                  JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
3310
3311                                        ;LOGIC TEST 47: WRAP 1, PE, NORMAL, ODD*****
3312
3313  012752  005767  165714        LT47:   TST     NRZOF           ;SEE IF NRZ ONLY
3314  012756  001402                        BEQ     LT47A           ;IF NOT: BR
3315  012760  000167  167466                JMP     TSCD2           ;RETURN TO SCHED
3316  012764  004767  007202        LT47A:  JSR     PC,PPGEN        ;GO GENERATE PRE/POSTAMBLE
3317  012770  012767  004260  166036        MOV     #4260,WCS1      ;SET EXPT CS1
3318  012776  012767  000100  166032        MOV     #100,WCS2       ;SET EXPT CS2
3319  013004  012767  010640  166026        MOV     #10640,WDS      ;SET EXPT DS
3320  013012  012767  000000  166022        MOV     #0,WER          ;SET EXPT WER
3321  013020  012767  033052  165604        MOV     #MSLT47,EMADDR  ;SET HEADER
3322  013026  012767  002300  165752        MOV     #2300,UDES      ;SET PE, NORMAL, ODD
3323  013034  000167  177650                JMP     LT46A           ;GO EXECUTE TEST SEQUENCE
```

```
3324
3325                                        ;LOGIC TEST 50:  WRAP 0, NRZ,NORMAL, ODD*****
3326
3327  013040  012767  144260  165766  LT50:   MOV     #144260,WCS1    ;SET EXPT CS1
3328  013046  012767  000100  165762          MOV     #100,WCS2       ;SET EXPT CS2
3329  013054  012767  150600  165756          MOV     #150600,WDS     ;SET EXPT DS
3330  013062  012767  000200  165752          MOV     #200,WER        ;SET EXPT ER
3331  013070  012767  033120  165534          MOV     #MSLT50,EMADDR  ;SET HEADER
3332  013076  012767  001700  165702          MOV     #1700,UDES      ;SET NRZ, NORMAL, ODD
3333  013104  005067  165702          LT50A:  CLR     PATRN           ;POINT TO PATTERN 0
3334  013110  012767  013116  165604          MOV     #LT50B,SCOLP    ;SET SCOPE ADDRESS
3335  013116  004767  003004          LT50B:  JSR     PC,WAMO         ;GO DO WRAP 0
3336  013122  005267  165664                  INC     PATRN           ;BUMP POINTER
3337  013126  032767  000004  165656          BIT     #4,PATRN        ;SEE IF DONE
3338  013134  001770                          BEQ     LT50B           ;IF NOT:  BR
3339  013136  004767  010730                  JSR     PC,ITER         ;GO SEE IF ITERATIONS
3340  013142  000167  167304                  JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
3341
3342                                        ;LOGIC TEST 51: WRAP 0, PE, NORMAL, ODD*****
3343
3344  013146  005767  165520        LT51:   TST     NRZOF           ;SEE IF NRZ ONLY
3345  013152  001402                BEQ     LT51A           ;IF NOT: BR
3346  013154  000167  167272        JMP     TSCD2           ;RETURN TI SCHED
3347  013160  012767  004260 165646 LT51A:  MOV     #4260,WCS1      ;SET EXPT CS1
3348  013166  012767  000100 165642         MOV     #100,WCS2       ;SET EXPT CS2
3349  013174  012767  010640 165636         MOV     #10640,WDS      ;SET EXPT DS
3350  013202  012767  000000 165632         MOV     #0,WER          ;SET EXPT ER
3351  013210  012767  033167 165414         MOV     #MSLT51,EMADDR  ;SET HEADER
3352  013216  012767  002300 165562         MOV     #2300,UDES      ;SET PE, NORMAL, ODD
3353  013224  000167  177654                JMP     LT50A           ;GO EXECUTE TEST SEQUENCE
```

```
3354
3355                                        ;LOGIC TEST 52:  CORE DUMP WRITE, WAM2*******
3356
3357  013230  012767  004260  165576  LT52:   MOV     #4260,WCS1      ;SET EXPT CS1
3358  013236  012767  000100  165572          MOV     #100,WCS2       ;SET EXPT CS2
3359  013244  012767  010600  165566          MOV     #10600,WDS      ;SET EXPT DS
3360  013252  012767  000000  165562          MOV     #0,WER          ;SET EXPT ER
3361  013260  012767  033235  165344          MOV     #MSLT52,EMADDR  ;SET HEADER
3362  013266  012767  001720  165512          MOV     #1720,UDES      ;SET NRZ, CORE DUMP, ODD
3363  013274  005067  165512                  CLR     PATRN           ;POINT TO PATTERN 0
3364  013300  012767  013306  165414          MOV     #LT52A,SCOLP    ;SET SCOPE ADDRESS
3365  013306  004767  002672          LT52A:  JSR     PC,WAM2         ;GO DO WAM 2
3366  013312  022767  000002  165472          CMP     #2,PATRN        ;SEE IF DONE
3367  013320  001404                          BEQ     LT52X           ;IF SO: BR
3368  013322  012767  000002  165462          MOV     #2,PATRN        ;SELECT PATTERN 2
3369  013330  000766                          BR      LT52A           ;CONTINUE
3370  013332  004767  010534          LT52X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
3371  013336  000167  167110                  JMP     TSCD2           ;RETURN TO SCHEDULES
3372
```

```
3373
3374                                        ;LOGIC TEST 53: CORE DUMP READ, WAM 3*****
3375
3376  013342  012767  004270  165464  LT53:   MOV     #4270,WCS1      ;SET EXPT CS1
3377  013350  012767  000100  165460          MOV     #100,WCS2       ;SET EXPT CS2
3378  013356  012767  010600  165454          MOV     #10600,WDS      ;SET EXPT DS
3379  013364  012767  000000  165450          MOV     #0,WER          ;SET EXPT ER
3380  013372  012767  033306  165232          MOV     #MSLT53,EMADDR  ;SET HEADER
3381  013400  012767  001720  165400          MOV     #1720,UDES      ;SELECT NRE, CORE DUMP, ODD
3382  013406  005067  165400                  CLR     PATRN           ;SELECT PATTERN 0
3383  013412  012767  013426  165302          MOV     #LT53A,SCOLP    ;SET SCOPE ADDRESS
3384  013420  012767  001070  165372          MOV     #WCDP0,RCDP     ;POINT TO PATTERN 0
3385  013426  004767  002616          LT53A:  JSR     PC,WAM3         ;GO DO WAM3
3386  013432  022767  000002  165352          CMP     #2,PATRN        ;SEE IF DONE
3387  013440  001407                          BEQ     LT53X           ;IF SO: BR
3388  013442  012767  000002  165342          MOV     #2,PATRN        ;SELECT PATTERN 2
3389  013450  012767  001056  165342          MOV     #WCDP2,RCDP     ;POINT TO PATTERN 2
3390  013456  000763                          BR      LT53A           ;CONTINUE
3391  013460  004767  010406          LT53X:  JSR     PC,ITER         ;GO SEE IF ITERATION
3392  013464  000167  166762                  JMP     TSCD2           ;RETURN TO SCHEDULE
```

```
3393
3394                                        ;LOGIC TEST 54: EVEN PARITY WRITE: WAM 1(M8903)*****
3395
3396  013470  012767  004260  165336  LT54:   MOV     #4260,WCS1      ;SET EXPT CS1
3397  013476  012767  000100  165332          MOV     #100,WCS2       ;SET EXPT CS2
3398  013504  012767  010600  165326          MOV     #10600,WDS      ;SET EXPT DS
3399  013512  012767  000000  165322          MOV     #0,WER          ;SET EXPT ER
3400  013520  012767  033356  165104          MOV     #MSLT54,EMADDR  ;SET HEADER
3401  013526  012767  001710  165252          MOV     #1710,UDES      ;SET NRZ, NORMAL, EVEN
3402  013534  000167  177150                  JMP     LT46A           ;GO EXECUTE WAM 1
```

```
 3403
 3404                                          ;LOGIC TEST 55:  EVEN PARITY READ:  WAM 0(M8903 M8904)*****
 3405
 3406  013540  012767  144260  165266  LT55:   MOV     #144260,WCS1     ;SET EXPT CS1
 3407  013546  012767  000100  165262          MOV     #100,WCS2        ;SET EXPT CS2
 3408  013554  012767  150600  165256          MOV     #150600,WDS      ;SET EXPT DS
 3409  013562  012767  000200  165252          MOV     #200,WER         ;SET EXPT ER
 3410  013570  012767  033437  165034          MOV     #MSLT55,EMADDR   ;SET HEADER
 3411  013576  012767  001710  165202          MOV     #1710,UDES       ;SET NRZ, NORMAL, EVEN
 3412  013604  000167  177274                  JMP     LT50A            ;GO DO WAM 0
```

```
3413
3414                                        ;LOGIC TEST 56:  READ REVERSE:  WAM 3(M8906)*****
3415
3416  013610  012767  004276  165216  LT56:   MOV     #4276,WCS1      ;SET EXPT CS1
3417  013616  012767  000100  165212          MOV     #100,WCS2       ;SET EXPT CS2
3418  013624  012767  010640  165206          MOV     #10640,WDS      ;SET EXPT DS
3419  013632  012767  000000  165202          MOV     #0,WER          ;SET EXPT ER
3420  013640  012767  033516  164764          MOV     #MSLT56,EMADDR  ;SET HEADER
3421  013646  012767  002300  165132          MOV     #2300,UDES      ;SELECT PE,NORMAL,ODD
3422  013654  012767  000001  165134          MOV     #1,RDRVF        ;SET READ REVERSE FLAG
3423  013662  000167  176436                  JMP     LT42A           ;GO DO WAM 3, REVERSE
3424
```

```
3425
3426                                    ;THE FOLLOWING SIX(6) TEST WILL REQUIRE TAPE MOVEMENT.  EACH
3427                                    ;TEST WILL PERFORM A TAPE WRITE WHILE IN A PARITICULAR MAINTENANCE
3428                                    ;MODE IN ORDER TO FORCE THE REMAINING ERROR CONDITIONS.
3429
3430                                    ;LOGIC TEST 57: CYCLIC REDUNDANCY ERROR(CRC)**********
3431
3432  013666  004767  001742      LT57:   JSR     PC,STATIC       ;GO SEE IF STATIC ONLY
3433  013672  012700  001000              MOV     #1000,R0
3434  013676  005300              LT57PS: DEC     R0
3435  013700  001376                      BNE     LT57PS          ;PAUSE
3436  013702  012767  033563  164722      MOV     #MSLT57,EMADDR
3437  013710  012767  013716  165004      MOV     #LT571T,SCOLP   ;SET SCOPE ADDRESS
3438  013716  004767  010232      LT571T: JSR     PC,INIT1        ;INIT SELECT DRIVE+SLAVE
3439  013722  052777  001700  164612      BIS     #1700,@TC       ;SET NRZ + NORMAL FORMAT
3440  013730  012777  177770  164554      MOV     #-10,@WC
3441  013736  012777  177760  164552      MOV     #-20,@FC        ;SET FC=20
3442  013744  012777  035050  164542      MOV     #WDATA,@BA      ;SET BUS ADDRESS
3443  013752  012777  000007  164554      MOV     #7,@MR          ;SET MM CODE
3444  013760  012777  000061  164522      MOV     #61,@C1         ;LOAD WRITE+GO
3445  013766  005000                      CLR     R0
3446  013770  032777  000200  164524  LT57A: BIT     #200,@DS        ;SEE IF DRY=1
3447  013776  001002                      BNE     LT57B           ;IF SO: BR
3448  014000  005300                      DEC     R0
3449  014002  001372                      BNE     LT57A           ;DELAY
3450  014004  022777  000200  164512  LT57B: CMP     #200,@ER        ;SEE IF LRC ERROR ONLY
3451  014012  001007                      BNE     LT57B1          ;IF NOT: BR
3452  014014  017702  164510              MOV     @CC,R2          ;GET CHECK CHAR
3453  014020  042702  177000              BIC     #177000,R2      ;MASK CRC
3454  014024  022702  000777              CMP     #777,R2         ;SEE IF SETUP CRC IS CORRECT
3455  014030  001410                      BEQ     LT57B2          ;IF SO: BR
3456  014032  004767  006402      LT57B1: JSR     PC,LTGER3       ;ELSE PRINT ERROR SETUP
3457  014036  012704  030217              MOV     #MSG55,R4
3458  014042  004767  010450              JSR     PC,TTOUT        ;PRINT SETUP ERROR MSG
3459  014046  000167  166400              JMP     TSCD2           ;RETURN TO SCHED
3460  014052  004767  010076      LT57B2: JSR     PC,INIT1        ;GO INIT
3461  014056  052777  000300  164456      BIS     #300,@TC        ;SET FORMAT+NRZ
3462  014064  012777  177770  164420      MOV     #-10,@WC        ;SET WC
3463  014072  012777  177760  164416      MOV     #-20,@FC        ;SET FC
3464  014100  012777  035050  164406      MOV     #WDATA,@BA      ;SET BA
3465  014106  012777  000021  164420      MOV     #21,@MR         ;SET MM
3466  014114  012777  000061  164366      MOV     #61,@C1         ;LOAD WRITE+GO
3467  014122  005000                      CLR     R0
3468  014124  032777  000200  164370  LT57C: BIT     #200,@DS        ;SEE IF DRY
3469  014132  001002                      BNE     LT57D           ;IF SO: BR
3470  014134  005300                      DEC     R0
3471  014136  001372                      BNE     LT57C           ;AWAIT DRY
3472  014140  005777  164360      LT57D: TST     @ER             ;SEE IF CRC=1
3473  014144  100411                      BMI     LT57E           ;IF SO: BR
3474  014146  012767  035016  164526      MOV     #TMS36,ERADD    ;SET ERROR CODE
3475  014154  012767  000001  164544      MOV     #1,EXFL
3476  014162  004767  006264              JSR     PC,LTGER0       ;GO PRINT ERROR
3477  014166  000410                      BR      LT57X
3478  014170  012701  100200      LT57E: MOV     #100200,R1      ;SET EXPT ERROR BITS
3479  014174  017702  164324              MOV     @ER,R2          ;GET ERROR REGISTER
3480  014200  020102                      CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
```

```
  3481  014202  001402                    BEQ     LT57X           ;IF NOT: BR
  3482  014204  004767  006230            JSR     PC,LTGER3       ;ELSE PRINT ERROR
  3483  014210  004767  007656  LT57X:    JSR     PC,ITER         ;DO ITERATIONS
  3484  014214  004767  006710            JSR     PC,DRVCLR
  3485  014220  000167  166226            JMP     TSCD2           ;RETURN TO SCHED
```

```
3486
3487                                        ;LOGIC TEST 60: LONGITUDINAL REDUNDANCY(LRC)**********
3488
3489  014224  004767  001404          LT60:  JSR     PC,STATIC        ;GO SEE IF STATIC ONLY
3490  014230  012767  014244  164464         MOV     #LT60IT,SCOLP    ;SET SCOPE ADDRESS
3491  014236  012767  033617  164366         MOV     #MSLT60,EMADDR
3492  014244  004767  007704          LT60IT: JSR     PC,INIT1         ;INIT, SELECT DRIVE+SLAVE
3493  014250  052777  000300  164264         BIS     #300,@TC         ;SET FORMAT+NRZ
3494  014256  012777  000023  164250         MOV     #23,@MR          ;SET MM
3495  014264  012777  177770  164220         MOV     #-10,@WC         ;SET WC
3496  014272  012777  177760  164216         MOV     #-20,@FC         ;SET FC
3497  014300  012777  035050  164206         MOV     #WDATA,@BA       ;SET BA
3498  014306  012777  000061  164174         MOV     #61,@C1          ;LOAD WRITE+GO
3499  014314  005000                         CLR     R0
3500  014316  032777  000200  164176 LT60C:  BIT     #200,@DS         ;SEE IF DRY
3501  014324  001002                         BNE     LT60D            ;IF SO: BR
3502  014326  005300                         DEC     R0
3503  014330  001372                         BNE     LT60C            ;AWAIT DRY
3504  014332  032777  000200  164164 LT60D:  BIT     #200,@ER         ;SEE IF LRC=1
3505  014340  001011                         BNE     LT60E            ;IF SO: BR
3506  014342  012767  034673  164332         MOV     #TMS26,ERADD     ;SET ERROR CODE
3507  014350  012767  000001  164350         MOV     #1,EXFL
3508  014356  004767  006070                 JSR     PC,LTGER0        ;GO PRINT
3509  014362  000425                         BR      LT60X
3510  014364  017702  164144          LT60E: MOV     @MR,R2
3511  014370  042702  000177                 BIC     #177,R2          ;MASK LRC
3512  014374  012701  157600                 MOV     #157600,R1       ;SET EXPT LRC
3513  014400  020102                         CMP     R1,R2            ;SEE IF EXPT = RCVD
3514  014402  001405                         BEQ     LT60F            ;IF SO: BR
3515  014404  012767  030174  164270         MOV     #MSG53,ERADD     ;SET ERROR CODE
3516  014412  004767  007202                 JSR     PC,LTGER1        ;PRINT ERROR
3517  014416  017702  164102          LT60F: MOV     @ER,R2           ;GET ERROR REGISTER
3518  014422  012701  000200                 MOV     #200,R1          ;SET EXPT ERROR BITS
3519  014426  020102                         CMP     R1,R2            ;SEE IF UNEXPECTED ERRORS
3520  014430  001402                         BEQ     LT60X            ;IF NOT: BR
3521  014432  004767  006002                 JSR     PC,LTGER3        ;ELSE PRINT ERROR
3522  014436  004767  007430          LT60X: JSR     PC,ITER
3523  014442  004767  006462                 JSR     PC,DRVCLR
3524  014446  000167  166000                 JMP     TSCD2            ;RETURN TO SCHED
```

```
3525
3526                                        ;LOGIC TEST 61: PE CORRECTABLE DATA (CORR)**********
3527
3528  014452  005767  164214        LT61:   TST     NRZOF           ;SEE IF NRZ ONLY
3529  014456  001122                BNE     LT61XX          ;IF SO: BR
3530  014460  004767  001150        JSR     PC,STATIC       ;GO SEE IF STATIC ONLY
3531  014464  012767  033653  164140        MOV     #MSLT61,EMADDR
3532  014472  012767  014500  164222        MOV     #LT611T,SCOLP
3533  014500  004767  007450        LT611T: JSR     PC,INIT1        ;INIT, SELCT DRIVE+SLAVE
3534  014504  052777  002300  164030        BIS     #2300,@TC       ;SET PE,NORMAL
3535  014512  012777  177600  163772        MOV     #-200,@WC       ;SET WC=200
3536  014520  012777  177400  163770        MOV     #-400,@FC       ;SET FC=400
3537  014526  012777  035050  163760        MOV     #WDATA,@BA      ;SET BA=START OF WRITE BUFFER
3538  014534  012777  000061  163746        MOV     #61,@C1         ;LOAD WRITE+GO
3539  014542  005000                CLR     R0
3540  014544  005777  163746        LT61A:  TST     @FC             ;SEE IF FC=0
3541  014550  001402                BEQ     LT61A1          ;IF SO: BR
3542  014552  005300                DEC     R0
3543  014554  001373                BNE     LT61A           ;DELAY FOR FC=0
3544  014556  012777  000021  163750  LT61A1: MOV     #21,@MR         ;SET MAINT CODE
3545  014564  005000                CLR     R0
3546  014566  032777  000200  163726  LT61B:  BIT     #200,@DS        ;SEE IF DRY IS SET
3547  014574  001002                BNE     LT61C           ;IF SO: BR
3548  014576  005300                DEC     R0
3549  014600  001372                BNE     LT61B           ;AWAIT DRY
3550  014602  005777  163716        LT61C:  TST     @ER             ;SEE IF CORR=1
3551  014606  100410                BMI     LT61D           ;IF SO: BR
3552  014610  012767  035007  164064        MOV     #TMS35,ERADD    ;SET ERROR CODE
3553  014616  012767  000001  164102        MOV     #1,EXFL
3554  014624  004767  005622        JSR     PC,LTGER0       ;GO PRINT ERROR
3555  014630  000240        LT61D:  NOP
3556  014632  000240        LT61E:  NOP
3557  014634  122777  000002  163666        CMPB    #2,@CC          ;SEE IF DEAD TRACK BIT 1
3558  014642  001414                BEQ     LT61F           ;IF SO: BR
3559  014644  117702  163660        MOVB    @CC,R2          ;SAVE RCVD
3560  014650  042702  177000        BIC     #177000,R2      ;MASK OUT CRC
3561  014654  112701  000002        MOVB    #2,R1           ;SAVE EXPT
3562  014660  012767  027567  164014        MOV     #MSG42,ERADD    ;SET ERROR CODE
3563  014666  004767  006726        JSR     PC,LTGER1       ;GO PRINT ERROR
3564  014672  000410                BR      LT61X
3565  014674  017702  163624        LT61F:  MOV     @ER,R2          ;GET ERROR REGISTER
3566  014700  012701  100000        MOV     #100000,R1      ;SET EXPT ERROR BITS
3567  014704  020102                CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
3568  014706  001402                BEQ     LT61X           ;IF NOT: BR
3569  014710  004767  005524        JSR     PC,LTGER3       ;ELSE PRINT ERROR
3570  014714  004767  007152        LT61X:  JSR     PC,ITER
3571  014720  004767  006204        JSR     PC,DRVCLR
3572  014724  000167  165522        LT61XX: JMP     TSCD2           ;RETURN TO SCHED
3573
```

```
3574
3575                                        ;LOGIC TEST 62: PE INCORRECTABLE DATA(INC,)***********
3576
3577  014730  005767  163736        LT62:   TST     NRZOF           ;SEE IF NRZ ONLY
3578  014734  001120                BNE     LT62XX          ;IF SO: BR
3579  014736  004767  000672                JSR     PC,STATIC       ;GO SEE IF STATIC ONLY
3580  014742  012767  033733  163662        MOV     #MSLT62,EMADDR
3581  014750  012767  014756  163744        MOV     #LT62IT,SCOLP
3582  014756  004767  007172        LT62IT: JSR     PC,INIT1        ;INIT SELECT DRIVE SLAVE
3583  014762  012777  177600  163522        MOV     #-200,@WC       ;SET WC=200
3584  014770  012777  177400  163520        MOV     #-400,@FC       ;SET FC=400
3585  014776  012777  035050  163510        MOV     #WDATA,@BA      ;SET BA=START OF WRITE BUFFER
3586  015004  052777  002300  163530        BIS     #2300,@TC       ;SET TO PE,NORMAL
3587  015012  012777  000061  163470        MOV     #61,@C1         ;LOAD WRITE+GO
3588  015020  005000                CLR     R0
3589  015022  005777  163470        LT62E:  TST     @FC             ;AWAIT FC=0
3590  015026  001402                BEQ     LT62E1
3591  015030  005300                DEC     R0
3592  015032  001373                BNE     LT62E           ;AWAIT FC=0
3593  015034  012777  000023  163472 LT62E1: MOV     #23,@MR         ;SET MAINT CODE
3594  015042  005000                CLR     R0
3595  015044  032777  000200  163450 LT62A:  BIT     #200,@DS        ;SEE IF DRY IS SET
3596  015052  001002                BNE     LT62B           ;IF SO: BR
3597  015054  005300                DEC     R0
3598  015056  001372                BNE     LT62A           ;AWAIT DRY
3599  015060  032777  000100  163436 LT62B:  BIT     #100,@ER        ;SEE IF INC=1
3600  015066  001010                BNE     LT62D           ;IF SO: BR
3601  015070  012767  034651  163604        MOV     #TMS23,ERADD    ;SET ERROR CODE
3602  015076  012767  000001  163622        MOV     #1,EXFL
3603  015104  004767  005342                JSR     PC,LTGER0       ;GO PRINT ERROR
3604  015110  017702  163414        LT62D:  MOV     @CC,R2          ;GET CHECK CHAR
3605  015114  042702  177000                BIC     #177000,R2      ;MASK CHECK CHAR
3606  015120  012701  000046                MOV     #46,R1          ;SET EXPT CK
3607  015124  020102                CMP     R1,R2           ;SEE IF EXPT = RCVD
3608  015126  001405                BEQ     LT62F           ;IF SO: BR
3609  015130  012767  030206  163544        MOV     #MSG54,ERADD
3610  015136  004767  006456                JSR     PC,LTGER1       ;ELSE GO PRINT ERROR
3611  015142  017702  163356        LT62F:  MOV     @ER,R2
3612  015146  042702  100600                BIC     #100600,R2      ;MASK NSG AND CORR
3613  015152  012701  000100                MOV     #100,R1         ;SET EXPT ERROR BITS
3614  015156  020102                CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
3615  015160  001402                BEQ     LT62X           ;IF NOT: BR
3616  015162  004767  005252                JSR     PC,LTGER3       ;ELSE PRINT ERROR
3617  015166  004767  006700        LT62X:  JSR     PC,ITER
3618  015172  004767  005732                JSR     PC,DRVCLR
3619  015176  000167  165250        LT62XX: JMP     TSCD2           ;RETURN TO SCHED
```

```
                                        ;LOGIC TEST 63: PE FORMAT ERROR(PEF,NSG)**********
                                
015202  005767  163464          LT63:   TST     NRZOF           ;SEE IF NRZ ONLY
015206  001114                          BNE     LT63XX          ;IF SO: BR
015210  004767  000420                  JSR     PC,STATIC       ;GO SEE IF STATIC ONLY
015214  012767  034015  163410          MOV     #MSLT63,EMADDR  ;SET HEADER
015222  012767  015230  163472          MOV     #LT63IT,SCOLP   ;SET SCOPE ADDRESS
015230  004767  006720          LT63IT: JSR     PC,INIT1        ;INITIALIZE
015234  012777  177770  163250          MOV     #-10,@WC        ;SET WC=10
015242  012777  177760  163246          MOV     #-20,@FC        ;SET FC=20
015250  052777  002300  163264          BIS     #2300,@TC       ;SET TO PE,NORMAL
015256  012777  035050  163230          MOV     #WDATA,@BA      ;SET BA=START OF WRITE BUFFER
015264  012777  000061  163216          MOV     #61,@C1         ;LOAD WRITE+GO
015272  005777  163220          LT63A:  TST     @FC
015276  001375                          BNE     LT63A           ;AWAIT FC 0
015300  032777  000100  163226  1$:     BIT     #100,@MR
015306  001774                          BEQ     1$              ;TIME DELAY
015310  032777  000100  163216  2$:     BIT     #100,@MR
015316  001374                          BNE     2$
015320  032777  000100  163206  3$:     BIT     #100,@MR
015326  001774                          BEQ     3$
015330  012777  000027  163176          MOV     #27,@MR         ;SET MM CODE TO KILL PEF
015336  012700  004000                  MOV     #4000,R0
015342  032777  000200  163152  LT63B:  BIT     #200,@DS        ;SEE IF DRY SET
015350  001002                          BNE     LT63C           ;IF SO: BR
015352  005300                          DEC     R0
015354  001372                          BNE     LT63B           ;AWAIT DRY
015356  032777  000200  163140  LT63C:  BIT     #200,@ER        ;SEE IF PEF SET
015364  001011                          BNE     LT63D           ;IF SO: BR
015366  012767  034665  163306          MOV     #TMS25,ERADD    ;SET ERROR TAG
015374  012767  000001  163324          MOV     #1,EXFL         ;SET EXPT FLAG
015402  004767  005044                  JSR     PC,LTGER0       ;GO PRINT ERROR
015406  000410                          BR      LT63X
015410  017702  163110          LT63D:  MOV     @ER,R2          ;GET ERROR REGISTER
015414  012701  000600                  MOV     #600,R1         ;SET EXPT ERROR BITS
015420  020102                          CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
015422  001402                          BEQ     LT63X           ;IF NOT: BR
015424  004767  005010                  JSR     PC,LTGER3       ;ELSE PRINT ERROR
015430  004767  006436          LT63X:  JSR     PC,ITER
015434  004767  005470                  JSR     PC,DRVCLR
015440  000167  165006          LT63XX: JMP     TSCD2           ;RETURN TO SCHED
```

```
3662                                                ;LOGIC TEST 64: FRAME COUNT OVERFLOW(M8905)*******
3663
3664  015444  012767  034051  163160  LT64:   MOV     #MSLT64,EMADDR  ;SET TEST HEADER
3665  015452  012767  015460  163242          MOV     #LT641T,SCOLP   ;SET SCOPE ADDRESS
3666  015460  004767  006470          LT641T: JSR     PC,INIT1        ;GO INIT
3667  015464  012777  177770  163020          MOV     #-10,@WC        ;SET WC = 10
3668  015472  012777  177760  163016          MOV     #-20,@FC        ;SET FC = 20
3669  015500  052777  001700  163034          BIS     #1700,@TC       ;SET TO NRZ, NORMAL, ODD
3670  015506  012777  035050  163000          MOV     #WDATA,@BA      ;SET BUS ADDRESS
3671  015514  012777  000013  163012          MOV     #13,@MR         ;SET WRAP 2
3672  015522  012777  000061  162760          MOV     #61,@C1         ;LOAD WRITE+GO
3673  015530  012700  040000                  MOV     #40000,R0
3674  015534  005777  163002          LT64A:  TST     @TC             ;SEE IF ALPHA
3675  015540  100002                  BPL     LT64B           ;IF SO: BR
3676  015542  005300                  DEC     R0
3677  015544  001373                  BNE     LT64A           ;AWAIT ALPHA
3678  015546  012700  000020          LT64B:  MOV     #20,R0          ;SET CLK CNT
3679  015552  052777  000040  162754  LT64C:  BIS     #40,@MR
3680  015560  042777  000040  162746          BIC     #40,@MR         ;CLOCK MR
3681  015566  005300                  DEC     R0
3682  015570  001370                  BNE     LT64C           ;IF NOT DONE ALL: BR
3683  015572  017702  162720                  MOV     @FC,R2
3684  015576  005001                  CLR     R1              ;SET TEST WORD
3685  015600  020102                  CMP     R1,R2           ;SEE IF EXPT = RCVD
3686  015602  001410                  BEQ     LT64X           ;IF SO: BR
3687  015604  012767  027042  163070          MOV     #MSG19,EPADD    ;SET ERROR CODE
3688  015612  012767  000001  163106          MOV     #1,EXFL         ;SET EXPT FLAG
3689  015620  004767  005774                  JSR     PC,LTGER1       ;GO PRINT ERROR
3690  015624  004767  006242          LT64X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
3691  015630  000167  164616                  JMP     TSCD2           ;RETURN TO SCHEDULAR
3692
3693                                                ;STATIC TESTS ONLY SUBROUTINE*********
3694
3695  015634  005767  163110          STATIC: TST     STFLG           ;SEE IF SINGLE TEST ONLY
3696  015640  001006                  BNE     STATX           ;IF SO: BR
3697  015642  005767  163154                  TST     STATC           ;SEE IF STATIC ONLY
3698  015646  001403                  BEQ     STATX           ;IF NOT: BR
3699  015650  005726                  TST     (SP)+           ;RESET STACK
3700  015652  000167  164574                  JMP     TSCD2           ;RETURN TO SCHEDULAR
3701  015656  000207                  STATX:  RTS     PC              ;RETUPN TO TEST
3702
```

```
3703
3704                                    ;*********************************************************
3705                                    ;DATA SETUP ROUTINE:
3706                                    ;
3707                                    ;THIS ROUTINE IS USED TO GENERATE THE DATA PATTERNS
3708                                    ;USED BY THE WRAP AROUND TESTS (LT50-LT64).
3709                                    ;*********************************************************
3710
3711  015660  005767  163064       DSUP:  TST     STFLG           ;SEE IF SINGLE TEST
3712  015664  001431                      BEQ     DS0             ;IF NOT: BR
3713  015666  032777  000100  162676      BIT     #100,@SWR       ;SEE IF SELECT PATTERN
3714  015674  001425                      BEQ     DS0             ;IF NOT: BR
3715  015676  012704  035466              MOV     #WMSG3,R4
3716  015702  004767  006610              JSR     PC,TTOUT        ;REQUEST PATTERN NUMBER
3717  015706  016703  163100              MOV     PATRN,R3
3718  015712  004767  006742              JSR     PC,OCTP         ;PRINT PATTERN NUMBER
3719  015716  012705  001012              MOV     #PATRN,R5       ;GET ADDRESS OF PATRN ENTRY
3720  015722  012701  000001              MOV     #1,R1           ;SET SIZE OF ENTRY
3721  015726  012702  000003              MOV     #3,R2           ;SET UPPER LIMIT
3722  015732  012703  000000              MOV     #0,R3           ;SET LOWER LIMIT
3723  015736  004767  006316              JSR     PC,TTR          ;GO GET PATTERN NUMBER
3724  015742  012767  000001  163040      MOV     #1,WPGFL        ;SET FLAG
3725  015750  012703  036376       DS0:   MOV     #WBUFF,R3       ;R3 = ADDRS OF WRITE BUFFER
3726  015754  016701  163032              MOV     PATRN,R1        ;R1 = PATTERN SELECTOR
3727  015760  062701  000001              ADD     #1,P1           ;BUMP POINTER
3728  015764  000241                      CLC
3729  015766  006101                      ROL     R1              ;MAKE PATTERN SELECTOR EVEN
3730  015770  000171  001044              JMP     @DATBL(R1)      ;GO GENERATE PATTERN
3731  015774  032777  010000  162534 DS1:   BIT     #10000,@DT      ;SEE IF SEVEN TRACK
3732  016002  001410                      BEQ     DS3             ;IF NOT: BR
3733  016004  012702  000202              MOV     #202,R2         ;SET BUFFER SIZE
3734  016010  012701  036376              MOV     #WBUFF,R1       ;SET START OF BUFFER
3735  016014  042721  140300       DS2:   BIC     #140300,(R1)+   ;MASK FOR 7 CH
3736  016020  005302                      DEC     R2              ;SEE IF DONE
3737  016022  001374                      BNE     DS2             ;IF NOT: BR
3738  016024  012702  000202       DS3:   MOV     #202,R2         ;R2=BUFFER SIZE +2
3739  016030  012701  037010              MOV     #RBUFF,R1       ;R1=READ DATA START
3740  016034  005021                DS4:  CLR     (R1)+           ;CLEAR BUFFER
3741  016036  005302                      DEC     R2              ;SEE IF DONE ALL
3742  016040  001375                      BNE     DS4             ;IF NOT: BR
3743  016042  000207                      RTS     PC              ;EXIT
3744
3745                                    ;ALL ONES**********
3746
3747  016044  012701  177777       DAT1:  MOV     #-1,R1          ;R1=DATA
3748  016050  012702  000202       DAT1A: MOV     #202,R2         ;R2=WORD COUNT +2
3749  016054  010123                DAT1B: MOV     R1,(R3)+        ;LOAD BUFFER
3750  016056  005302                      DEC     R2              ;SEE IF DONE
3751  016060  001375                      BNE     DAT1B           ;IF NOT: BR
3752  016062  000167  177706              JMP     DS1             ;RETURN
3753
```

```
3754
3755                                        ;ALL ZEROS**********
3756
3757  016066  005001                DAT2:   CLR     R1              ;R1=DATA
3758  016070  000167  177754              JMP     DAT1A           ;LOAD BUFFER
3759
3760                                        ;ONE/ZERO IN ALTERNATING CHARACTERS**********
3761
3762  016074  012701  125125        DAT3:   MOV     #125125,R1      ;R1=DATA
3763  016100  000167  177744              JMP     DAT1A           ;LOAD BUFFER
3764
3765                                        ;ALL BITS 0-377**********
3766
3767  016104  005001                DAT4:   CLR     R1              ;R1=STARTING DATA
3768  016106  012702  000404              MOV     #404,R2         ;R2=CHARACTER COUNT
3769  016112  110123                DAT4A:  MOVB    R1,(R3)+        ;LOAD BUFFER
3770  016114  105201                        INCB    R1              ;BUMP DATA
3771  016116  005302                        DEC     R2              ;SEE IF DONE
3772  016120  001374                        BNE     DAT4A           ;IF NOT: BR
3773  016122  000167  177646              JMP     DS1             ;RETURN
3774
```

```
3775
3776                                        ;WRAP AROUND MODE 0 GLOBAL*****
3777
3778  016126  012767  000006  162624  WAM0:   MOV     #6,WAM          ;SET WAM NUMBER
3779  016134  012767  000060  162620  WAM01:  MOV     #60,FUN
3780  016142  005067  162616                  CLR     DATC
3781  016146  012767  036376  162614          MOV     #WBUFF,DATAD    ;SET BUFFER ADDRESS
3782  016154  012767  037010  162610          MOV     #RBUFF,RDAD     ;SET POINTER TO READ BUFFER
3783  016162  004767  000170                  JSR     PC,SETUP        ;GO SET UP
3784  016166  000167  000516                  JMP     EXEC
3785
3786                                        ;WRAP AROUND MODE 1 WRITE BUFFER**********
3787
3788  016172  012767  000010  162560  WAM1:   MOV     #10,WAM
3789  016200  000167  177730                  JMP     WAM01
3790
3791                                        ;WRAP AROUND MODE 2 BIT FIDDLER WRITE**********
3792
3793  016204  012767  000012  162546  WAM2:   MOV     #12,WAM
3794  016212  012767  000060  162542          MOV     #60,FUN
3795  016220  005067  162540                  CLR     DATC
3796  016224  012767  036376  162536          MOV     #WBUFF,DATAD
3797  016232  012767  037010  162532          MOV     #RBUFF,RDAD
3798  016240  004767  000112          WAM2A:  JSR     PC.SETUP
3799  016244  000167  000440                  JMP     EXEC
3800
3801                                        ;WRAP AROUND MODE 3 BIT FIDDLER READ**********
3802
3803  016250  012767  000014  162502  WAM3:   MOV     #14,WAM         ;SET WAM NUMBER
3804  016256  012767  000070  162476          MOV     #70,FUN         ;SET FUNCTION
3805  016264  012767  037010  162476          MOV     #RBUFF,DATAD    ;SET BUFFER ADDRESS
3806  016272  012767  036376  162466          MOV     #WBUFF,WTAD     ;SET POINTER TO WRITE BUFFER
3807  016300  005767  162512                  TST     RDRVF
3808  016304  001411                          BEQ     WAM3A
3809  016306  062767  000376  162454          ADD     #376,DATAD
3810  016314  062767  000377  162444          ADD     #377,WTAD
3811  016322  012767  000076  162432          MOV     #76,FUN         ;SET READ REVERSE CODE
3812  016330  032767  000020  162450  WAM3A:  BIT     #20,UDES
3813  016336  001403                          BEQ     WAM3B
3814  016340  016767  162454  162420          MOV     RCDP,WTAD
3815  016346  004767  000004          WAM3B:  JSR     PC,SETUP        ;GO SET UP
3816  016352  000167  000332                  JMP     EXEC            ;GO EXECUTE
3817
```

```
3818                                        ;REGISTER SETUP ROUTINE*****
3819
3820  016356  005767  162366        SETUP:  TST     STFLG           ;SEE IF SINGLE TEST
3821  016362  001403                 SETO:   BEQ     SET0            ;IF NOT: BR
3822  016364  005767  162420                TST     WPGFL           ;SEE IF HAVE SELECTED PATTERN
3823  016370  001002                 SET1:   BNE     SET1            ;IF SO: BR
3824  016372  004767  177262                JSR     PC,DSUP         ;GO DO DATA SETUP
3825  016376  004767  005552                JSR     PC,INIT1        ;GO INIT SELECT DRIVE, SLAVE
3826  016402  004767  000656                JSR     PC,BOTT         ;GO ASSURE NOT AT BOT
3827  016406  012777  177400  162102        MOV     #-400,@FC       ;SET FC=WCX2
3828  016414  032767  000020  162364        BIT     #20,UDES        ;SEE IF CORE DUMP
3829  016422  001403                        BEQ     SET2            ;IF NOT: BR
3830  016424  012777  177000  162064        MOV     #-1000,@FC      ;SET FC=WCX4
3831  016432  012777  177600  162052  SET2: MOV     #-200,@WC       ;SET WC
3832  016440  016777  162324  162046        MOV     DATAD,@BA       ;SET BUS ADDRESS
3833  016446  032777  010000  162044        BIT     #10000,@CS      ;ASSURE DRIVE THERE
3834  016454  001420                        BEQ     SP1             ;IF SO: BR
3835  016456  032777  020000  162106        BIT     #20000,@SWR     ;SEE IF PRINT ERRORS
3836  016464  001004                        BNE     SP01            ;IF NOT: BR
3837  016466  012704  035507                MOV     #WMSG4,R4
3838  016472  004767  006020                JSR     PC,TTOUT        ;PRINT NON-EXISTANT DRIVE
3839  016476  032777  100000  162066  SP01: BIT     #100000,@SWR    ;SEE IF HALT ON ERROR
3840  016504  001402                        BEQ     SP0             ;IF NOT: BR
3841  016506  004767  007122                JSR     PC.STOP
3842  016512  000167  177660          SP0:  JMP     SET1            ;RESETUP
3843  016516  022767  000014  162234  SP1:  CMP     #14,WAM         ;SEE IF WAM 3
3844  016524  001026                        BNE     SP1B            ;IF NOT: BR
3845  016526  117767  162234  162230        MOVB    @WTAD,DATC      ;GET FIRST CHAR
3846  016534  042767  177400  162222        BIC     #177400,DATC
3847  016542  000367  162216                SWAB    DATC
3848  016546  005767  162244                TST     RDRVF           ;SEE IF READ REVERSE
3849  016552  001403                        BEQ     SP1A            ;IF NOT: BR
3850  016554  005367  162206                DEC     WTAD            ;DECREMENT POINTER
3851  016560  000410                        BR      SP1B
3852  016562  005267  162200          SP1A: INC     WTAD            ;BUMP POINTER
3853  016566  032767  000020  162212        BIT     #20,UDES        ;SEE IF CORE DUMP
3854  016574  001402                        BEQ     SP1B            ;IF NOT: BR
3855  016576  005267  162164                INC     WTAD            ;BUMP POINTER AGAIN
3856  016602  056777  162200  161732  SP1B: BIS     UDES,@TC        ;SET UNIT DESCRIPTION (DEN,PAR,FMT)
3857  016610  052777  000001  161716        BIS     #1,@MR          ;SET MAINT MODE
3858  016616  056777  162136  161710        BIS     WAM,@MR         ;SET WAM
3859  016624  056777  162134  161702        BIS     DATC,@MR        ;SET DATA
3860  016632  016777  162124  161650        MOV     FUN,@C1         ;SET FUNCTION
3861  016640  032777  040000  161654        BIT     #40000,@DS      ;ASSURE NO ERROR
3862  016646  001001                        BNE     SP3             ;IF NOT: BR
3863  016650  000207                        RTS     PC              ;RETURN
3864  016652  032777  020000  161712  SP3:  BIT     #20000,@SWR     ;SEE IF PRINT ERRORS
3865  016660  001004                        BNE     SP4             ;IF NOT: BR
3866  016662  012704  035450                MOV     #WMSG2,R4
3867  016666  004767  005624                JSR     PC,TTOUT        ;PRINT SETUP ERROR
3868  016672  032777  100000  161672  SP4:  BIT     #100000,@SWR    ;SEE IF HALT ON ERROR
3869  016700  001402                        BEQ     SP5             ;IF NOT: BR
3870  016702  004767  006726                JSR     PC,STOP
3871  016706  000207                 SP5:   RTS     PC              ;RETURN
```

```
3872                                            ;EXECUTE WAM ROUTINE*****
3873
3874  016710  032777  000040  161616  EXEC:   BIT     #40,@MR
3875  016716  001403                          BEQ     EX0             ;ASSURE MAINT CLOCK IS ZERO
3876  016720  042777  000040  161606          BIC     #40,@MR         ;IF NOT: CLEAR IT
3877  016726  022767  000010  162024  EX0:    CMP     #10,WAM         ;SEE IF WAM 1 OR 2 OR 3
3878  016734  003402                          BLE     EX1             ;IF SO: BR
3879  016736  000167  000364                  JMP     EXW2            ;GO DO WAM 0
3880  016742  052777  000001  161540  EX1:    BIS     #1,@C1          ;SET GO BIT
3881  016750  005000                          CLR     R0
3882  016752  012701  000002                  MOV     #2,R1           ;SET DELAY
3883  016756  032777  100000  161556  EX1A:   BIT     #100000,@TC     ;SEE IF ALPHA
3884  016764  001404                          BEQ     EX2             ;IF SO: BR
3885  016766  005300                          DEC     R0
3886  016770  001372                          BNE     EX1A            ;AWAIT ALPHA
3887  016772  005301                          DEC     R1
3888  016774  001370                          BNE     EX1A
3889  016776  005077  161566          EX2:    CLR     @PSW
3890  017002  012701  000400                  MOV     #400,R1         ;SET NUMBER OF CLKS
3891  017006  032767  000020  161772          BIT     #20,UDES        ;SEE IF CORE DUMP
3892  017014  001402                          BEQ     EX3             ;IF NOT: BR
3893  017016  012701  001000                  MOV     #1000,R1        ;SET CLOCKS LWCX4
3894  017022  022767  000014  161730  EX3:    CMP     #14,WAM         ;SEE IF WAM 3
3895  017030  001413                          BEQ     EX5A            ;IF SO: BR
3896  017032  032767  002000  161746          BIT     #2000,UDES      ;SEE IF PE
3897  017040  001405                          BEQ     EX5             ;IF NOT PE: BR
3898  017042  000241                          CLC
3899  017044  006101                          ROL     R1
3900  017046  062701  000246                  ADD     #246,R1         ;SET TO ALLOW FOR PRE/POSTAMBLE
3901  017052  000402                          BR      EX5A
3902  017054  062701  000010          EX5:    ADD     #10,R1          ;ADD CLOCKS FOR CRC AND LRC
3903  017060  022767  000014  161672  EX5A:   CMP     #14,WAM         ;SEE IF WAM 3
3904  017066  001044                          BNE     EX5C            ;IF NOT: BR
3905  017070  117700  161672                  MOVB    @WTAD,R0
3906  017074  042700  177400                  BIC     #177400,R0
3907  017100  005767  161712                  TST     RDRVF           ;SEE IF REVERSE
3908  017104  001403                          BEQ     EX5A1           ;IF NOT: BR
3909  017106  005367  161654                  DEC     WTAD            ;DEC POINTER
3910  017112  000416                          BR      EX5B
3911  017114  005267  161646          EX5A1:  INC     WTAD
3912  017120  032767  000020  161660          BIT     #20,UDES        ;SEE IF CORE DUMP
3913  017126  001410                          BEQ     EX5B            ;IF NOT: BR
3914  017130  005267  161632                  INC     WTAD            ;BUMP POINTER
3915  017134  005777  161626                  TST     @WTAD           ;SEE IF END
3916  017140  001003                          BNE     EX5B            ;IF NOT: BR
3917  017142  162767  000010  161616          SUB     #10,WTAD        ;RESTORE POINTER
3918  017150  052777  000040  161356  EX5B:   BIS     #40,@MR         ;CLOCK UP
3919  017156  017702  161352                  MOV     @MR,R2          ;READ MR
3920  017162  042702  177400                  BIC     #177400,R2      ;MASK OUT DATA
3921  017166  000300                          SWAB    R0              ;POSITION DATA
3922  017170  050002                          BIS     R0,R2           ;LOAD NEW DATA
3923  017172  010277  161336                  MOV     R2,@MR          ;CLOCK DOWN AND LOAD NEW DATA
3924  017176  000426                          BR      EX5D
3925  017200  052777  000040  161326  EX5C:   BIS     #40,@MR         ;CLOCK UP
3926  017206  042777  000040  161320          BIC     #40,@MR         ;CLOCK DOWN
3927  017214  017700  161314                  MOV     @MR,R0          ;GET MR
```

```
3928  017220  000300                          SWAB    R0
3929  017222  032767  000010  161556          BIT     #10,UDES        ;SEE IF EVEN PAR
3930  017230  001405                          BEQ     EX5C0           ;IF NOT: BR
3931  017232  010077  161534                  MOV     R0,@RDAD
3932  017236  005267  161530                  INC     RDAD
3933  017242  000402                          BR      EX5C1
3934  017244  110077  161522          EX5C0:  MOVB    R0,@RDAD        ;PUT CHAR IN CORE
3935  017250  005267  161516          EX5C1:  INC     RDAD
3936  017254  005301                  EX5D:   DEC     R1              ;SEE IF DONE CLKS
3937  017256  001300                          BNE     EX5A            ;IF NOT: BR
3938  017260  000167  002762                  JMP     EORP            ;GO DO EOR
3939
3940                                          ;ASSURE NOT AT BOT FOR WRAP TESTS**********
3941
3942  017264  032777  000002  161230  BOTT:   BIT     #2,@DS          ;SEE IF BOT
3943  017272  001414                          BEQ     BOTTX           ;IF NOT: BR
3944  017274  052777  001700  161240          BIS     #1700,@TC       ;SET NRZ
3945  017302  012777  000025  161200          MOV     #25,@C1         ;DO ERASE
3946  017310  032777  000200  161204  BOTTA:  BIT     #200,@DS
3947  017316  001774                          BEQ     BOTTA           ;AWAIT DRY
3948  017320  004767  004630                  JSR     PC,INIT1        ;INIT
3949  017324  000207                  BOTTX:  RTS     PC              ;RETURN
3950
```

```
3951                                        ;EXECUTE WAM 0******
3952
3953  017326  012767  017500  161344  EXW2:   MOV     #EXW2H,RTRN     ;SET INTERRUPT RETURN ADDRESS
3954  017334  012701  000200                  MOV     #200,R1         ;SET NUMBER OF CLOCKS = FC/2
3955  017340  032767  002000  161440          BIT     #2000,UDES      ;SEE IF PE
3956  017346  001402                          BEQ     EXW2A           ;IF NOT: BR
3957  017350  012701  000100                  MOV     #100,R1         ;ELSE SET CLKS = FC/4
3958  017354  016702  161412          EXW2A:  MOV     RDAD,R2         ;SET BUFFER ADDRESS
3959  017360  012777  000161  161122          MOV     #161,@C1        ;SET WRITE+GO
3960  017366  005077  161176                  CLR     @PSW            ;ALLOW INTERRUPT
3961  017372  032777  000040  161134  EXW2B:  BIT     #40,@MR
3962  017400  001774                          BEQ     EXW2B           ;AWAIT CLOCK UP
3963  017402  017722  161126                  MOV     @MR,(R2)+       ;GET DATA
3964  017406  032777  000040  161120  EXW2C:  BIT     #40,@MR
3965  017414  001374                          BNE     EXW2C           ;AWAIT CLOCK DOWN
3966  017416  017722  161112                  MOV     @MR,(R2)+       ;GET DATA
3967  017422  005301                          DEC     R1              ;SEE IF DONE ALL
3968  017424  001362                          BNE     EXW2B           ;IF NOT: BR
3969  017426  012701  000003          EXW2E:  MOV     #3,R1
3970  017432  005000                          CLR     R0              ;SET DELAY
3971  017434  005300          EXW2F:  DEC     R0
3972  017436  001376                          BNE     EXW2F
3973  017440  005301                          DEC     R1
3974  017442  001374                          BNE     EXW2F           ;DELAY
3975  017444  032777  020000  161120          BIT     #20000,@SWR     ;SEE IF ERROR PRINT
3976  017452  001004                          BNE     EXW2G           ;IF NOT: BR
3977  017454  012704  035712                  MOV     #WMSG24,R4
3978  017460  004767  005032                  JSR     PC,TTOUT        ;PRINT NO INTERUPT
3979  017464  032777  100000  161100  EXW2G:  BIT     #100000,@SWR    ;SEE IF HALT ON ERROR
3980  017472  001402                          BEQ     EXW2H           ;IF NOT: BR
3981  017474  004767  006134                  JSR     PC,STOP
3982  017500  012701  037010          EXW2H:  MOV     #RBUFF,R1       ;GET START OF READ BUFFER
3983  017504  012700  000400                  MOV     #400,R0         ;SET SIZE
3984  017510  010102                          MOV     R1,R2
3985  017512  012203          EXW2J:  MOV     (R2)+,R3
3986  017514  000303                          SWAB    R3
3987  017516  032767  000010  161262          BIT     #10,UDES        ;SEE IF EVEN PAR
3988  017524  001402                          BEQ     EXW2J0          ;IF NOT: BR
3989  017526  010321                          MOV     R3,(R1)+        ;SAVE PAR + DATA
3990  017530  000401                          BR      EXW2J1
3991  017532  110321          EXW2J0: MOVB    R3,(R1)+        ;ASSEMBLE DATA IN BYTES
3992  017534  005300          EXW2J1: DEC     R0
3993  017536  001365                          BNE     EXW2J           ;CONTINUE FOR ALL
3994  017540  032777  000200  161024          BIT     #200,@SWR       ;SEE IF STATUS CHECK
3995  017546  001002                          BNE     EXW2K           ;IF NOT: BR
3996  017550  004767  000016                  JSR     PC,WSTCK        ;ELSE GO CHECK STATUS
3997  017554  032777  000400  161010  EXW2K:  BIT     #400,@SWR       ;SEE IF DATA CHECK
3998  017562  001002                          BNE     EXW2X           ;IF NOT: BR
3999  017564  004767  000272                  JSR     PC,DCHK         ;ELSE GO CHECK DATA
4000  017570  000207          EXW2X:  RTS     PC              ;EXIT
```

```
4001
4002                                        ;WRAP AROUND STATUS CHECK ROUTINE*********
4003
4004  017572  005067  161204        WSTCK:  CLR     SERFL           ;CLEAR ERROR FLAG
4005  017576  005067  161026                CLR     HDRFL           ;CLEAR HEADER FLAG
4006  017602  012767  035534  161072        MOV     #WMSG6,ERADD    ;SET CODE=CS1
4007  017610  017702  160674                MOV     @C1,R2          ;GET RCVD CS1
4008  017614  016705  161214                MOV     WCS1,R5         ;GET EXPT CS1
4009  017620  004767  000114                JSR     PC,WSTG         ;GO CHK
4010  017624  012767  035561  161050        MOV     #WMSG6D,ERADD   ;SET CODE=CS2
4011  017632  017702  160662                MOV     @CS,R2          ;SET RCVD CS2
4012  017636  016705  161174                MOV     WCS2,R5         ;GET EXPT CS2
4013  017642  056705  160766                BIS     DRVN,R5         ;SET DRIVE NUMBER IN EXPT CS2
4014  017646  004767  000066                JSR     PC,WSTG         ;GO CHK
4015  017652  012767  035567  161022        MOV     #WMSG6E,ERADD   ;SET CODE=DS
4016  017660  017702  160636                MOV     @DS,R2          ;SET RCVD DS
4017  017664  016705  161150                MOV     WDS,R5          ;GET EXPT DS
4018  017670  004767  000044                JSR     PC,WSTG         ;GO CHK
4019  017674  012767  035574  161000        MOV     #WMSG6F,ERADD   ;SET CODE=ER
4020  017702  017702  160616                MOV     @ER,R2          ;GET RCVD ER
4021  017706  016705  161130                MOV     WER,R5          ;GET EXPT ER
4022  017712  004767  000022                JSR     PC,WSTG         ;GO CHK
4023  017716  005767  161060                TST     SERFL           ;SEE IF ANY ERRORS
4024  017722  001456                        BEQ     WSTX            ;IF NOT: BR
4025  017724  005777  160642                TST     @SWP            ;SEE IF HALT ON ERROR
4026  017730  100053                        BPL     WSTX            ;IF NOT: BR
4027  017732  004767  005676                JSR     PC,STOP
4028  017736  000450                        BR      WSTX            ;CONTINUE
4029  017740  020205                WSTG:   CMP     R2,R5           ;SEE IF EXPT=RCVD
4030  017742  001446                        BEQ     WSTX            ;IF SO: BR
4031  017744  005267  161032                INC     SERFL           ;SET ERROR FLAG
4032  017750  032777  020000  160614        BIT     #20000,@SWR     ;SEE IF PRINT ERRORS
4033  017756  001040                        BNE     WSTX            ;IF NOT: BR
4034  017760  005767  160644                TST     HDRFL           ;SEE IF DONE HEADER
4035  017764  001010                        BNE     WSTGO           ;IF SO: BR
4036  017766  016704  160640                MOV     EMADDR,R4
4037  017772  004767  004520                JSR     PC,TTOUT        ;PRINT TEST HEADER
4038  017776  012704  035676                MOV     #WMSG23,R4
4039  020002  004767  004510                JSR     PC,TTOUT        ;PRINT STATUS TAG
4040  020006  012767  000001  160614 WSTGO: MOV     #1,HDRFL        ;SET HEADER FLAG
4041  020014  016704  160662                MOV     ERADD,R4
4042  020020  004767  004472                JSR     PC,TTOUT        ;PRINT CODE
4043  020024  012704  026726                MOV     #MSG12,R4
4044  020030  004767  004462                JSR     PC,TTOUT        ;PRINT EXPT TAG
4045  020034  010503                        MOV     R5,R3
4046  020036  004767  004616                JSR     PC,OCTP         ;PRINT EXPT STATUS
4047  020042  012704  026735                MOV     #MSG13,R4
4048  020046  004767  004444                JSR     PC,TTOUT        ;PRINT RCVD TAG
4049  020052  010203                        MOV     R2,R3
4050  020054  004767  004600                JSR     PC,OCTP         ;PRINT RCVD STATUS
4051  020060  000207                WSTX:   RTS     PC              ;RETURN
4052
```

```
4053
4054                                        ;DATA CHECK ROUTINE*****
4055
4056  020062  005067  160542        DCHK:   CLR     HDRFL           ;CLEAR HEADER FLAG
4057  020066  005067  160704                CLR     DERFL           ;CLEAR DATA ERROR FLAG
4058  020072  005067  160706                CLR     CRCNT           ;CLEAR CHAR CNTR
4059  020076  032767  000010  160702        BIT     #10,UDES        ;SEE IF EVEN PARITY
4060  020104  001402                        BEQ     DCHKA0          ;IF NOT: BR
4061  020106  000167  000602                JMP     DCHKE           ;ELSE GO CHECK EVEN
4062  020112  022767  000010  160640  DCHKA0: CMP     #10,WAM         ;SEE IF WAM 1
4063  020120  001006                        BNE     DCHKA           ;IF NOT: BR
4064  020122  032767  002000  160656        BIT     #2000,UDES      ;SEE IF PE
4065  020130  001402                        BEQ     DCHKA           ;IF NOT: BR
4066  020132  000167  001202                JMP     PRCHK           ;GO CHK DATA
4067  020136  012700  177400        DCHKA:  MOV     #-400,R0        ;SET NUMBER OF CHARACTERS
4068  020142  022767  000012  160610        CMP     #12,WAM
4069  020150  001006                        BNE     DCHKA1          ;IF NOT WRAP 2: BR
4070  020152  032767  000020  160626        BIT     #20,UDES
4071  020160  001402                        BEQ     DCHKA1          ;IF NOT CORE DUMP: BR
4072  020162  012700  177000                MOV     #-1000,R0
4073  020166  022767  000006  160564  DCHKA1: CMP     #6,WAM
4074  020174  001007                        BNE     DCHKA2
4075  020176  032767  002000  160602        BIT     #2000,UDES      ;SEE IF PE MODE
4076  020204  001430                        BEQ     DCHKB           ;IF NOT: BR
4077  020206  012700  177600                MOV     #-200,R0        ;SET CHAR CNTR TO FC/2 FOR PE
4078  020212  000425                        BR      DCHKB
4079  020214  022767  000012  160536  DCHKA2: CMP     #12,WAM         ;SEE IF WRAP 2
4080  020222  001021                        BNE     DCHKB           ;IF NOT: BR
4081  020224  032767  002000  160554        BIT     #2000,UDES      ;SEE IF PE
4082  020232  001415                        BEQ     DCHKB           ;IF NOT: BR
4083  020234  012700  177653                MOV     #-125,R0        ;POINT TO START OF DATA
4084  020240  012767  000001  160526        MOV     #1,W2FLG        ;SET WRAP 2 FLAG
4085  020246  004767  000014                JSR     PC,DCHKB        ;GO CHECK DATA
4086  020252  004767  001362                JSR     PC,W1DCHK       ;GO CHECK WRAP 1 DATA
4087  020256  005067  160512                CLR     W2FLG
4088  020262  000167  000362                JMP     DCHKX
4089  020266  005067  160504        DCHKB:  CLR     DERFL
4090  020272  012701  036376                MOV     #WBUFF,R1       ;SET GOOD POINTER
4091  020276  012702  037010                MOV     #RBUFF,R2       ;SET READ POINTER
4092  020302  032767  000020  160476        BIT     #20,UDES        ;SEE IF CORE DUMP
4093  020310  001416                        BEQ     DCHKD           ;IF NOT: BR
4094  020312  022767  000012  160440        CMP     #12,WAM         ;SEE IF WAM 2
4095  020320  001011                        BNE     DCHKD           ;IF NOT: BR
4096  020322  005767  160464                TST     PATRN           ;SEE IF PATTERN 0
4097  020326  001003                        BNE     DCHKC           ;IF NOT: BR
4098  020330  012701  001070                MOV     #WCDP0,R1       ;SET CORE DUMP PATTERN 0
4099  020334  000404                        BR      DCHKD           ;GO CHECK DATA
4100  020336  012701  001056        DCHKC:  MOV     #WCDP2,R1       ;SET CORE DUMP WRITE PATTERN 2
4101  020342  000401                        BR      DCHKD           ;GO CHECK DATA
4102  020344  000240                DCHKD:  NOP
4103  020346  121112                DCHKD:  CMPB    (R1),(R2)       ;SEE IF DATA OK
4104  020350  001466                        BEQ     DCHK2           ;IF SO: BR
4105  020352  032777  020000  160212        BIT     #20000,@SWR     ;SEE IF PRINT ERRORS
4106  020360  001062                        BNE     DCHK2           ;IF NOT: BR
4107  020362  005767  160242                TST     HDRFL           ;SEE IF DONE HEADER
4108  020366  001004                        BNE     DCHK1           ;IF SO. BR
```

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4109  020370  016704  160236                MOV     EMADDR,R4
4110  020374  004767  004116                JSR     PC,TTOUT        ;PRINT HEADER
4111  020400  005767  160372        DCHK1:  TST     DERFL           ;SEE IF FIRST ERROR
4112  020404  001014                BNE     DCHK1A          ;IF NOT: BR
4113  020406  012704  035644                MOV     #WMSG16,R4
4114  020412  004767  004100                JSR     PC,TTOUT        ;PRINT DATA ERROR TAG
4115  020416  012704  036071                MOV     #WMSG32,R4
4116  020422  004767  004070                JSR     PC,TTOUT        ;PRINT PATRN TAG
4117  020426  016703  160360                MOV     PATRN,R3
4118  020432  004767  004222                JSR     PC,OCTP         ;PRINT PATTERN NUMBER
4119  020436  012767  000001  160164 DCHK1A: MOV     #1,HDRFL        ;SET HEADER FLAG
4120  020444  012767  000001  160324        MOV     #1,DERFL        ;SET DATA ERROR FLAG
4121  020452  012704  035670                MOV     #WMSG21,R4
4122  020456  004767  004034                JSR     PC,TTOUT        ;PRINT CHARACTER NUMBER TAG
4123  020462  016703  160316                MOV     CRCNT,R3
4124  020466  004767  004166                JSR     PC,OCTP         ;PRINT CHARACTER NUMBER
4125  020472  012704  035656                MOV     #WMSG17,R4
4126  020476  004767  004014                JSR     PC,TTOUT        ;PRINT GOOD TAG
4127  020502  111103                MOVB    (R1),R3
4128  020504  004767  004714                JSR     PC,DOUT         ;PRINT GOOD DATA
4129  020510  012704  035663                MOV     #WMSG20,R4
4130  020514  004767  003776                JSR     PC,TTOUT        ;PRINT BAD TAG
4131  020520  111203                MOVB    (R2),R3
4132  020522  004767  004676                JSR     PC,DOUT         ;PRINT BAD DATA
4133  020526  005767  160242        DCHK2:  TST     W2FLG
4134  020532  001020                BNE     DCHK2B
4135  020534  005201                INC     R1              ;BUMP POINTER
4136  020536  032767  000020  160242        BIT     #20,UDES        ;SEE IF CORE DUMP
4137  020544  001413                BEQ     DCHK2B          ;IF NOT: BR
4138  020546  022767  000012  160204        CMP     #12,WAM         ;SEE IF WAM 2
4139  020554  001006                BNE     DCHK2A          ;IF NOT: BR
4140  020556  005201                INC     R1              ;BUMP POINTER
4141  020560  005711                TST     (R1)            ;SEE IF END OF PATTERN
4142  020562  001004                BNE     DCHK2B          ;IF NOT: BR
4143  020564  162701  000010                SUB     #10,R1          ;RESET POINTER TO START OF PATTERN
4144  020570  000401                BR      DCHK2B          ;CONTINUE CHECK
4145  020572  000240        DCHK2A: NOP
4146  020574  005202        DCHK2B: INC     R2
4147  020576  022767  000006  160154        CMP     #6,WAM          ;SEE IF WAM 0
4148  020604  001005                BNE     DCHK3
4149  020606  032767  002000  160172        BIT     #2000,UDES      ;SEE IF PE
4150  020614  001401                BEQ     DCHK3           ;IF NOT PE: BR
4151  020616  005201                INC     R1              ;BUMP WRITE DATA ADDRESS
4152  020620  005267  160160        DCHK3:  INC     CRCNT           ;BUMP CHAR CNTR
4153  020624  032777  000400  157740        BIT     #400,@SWR       ;SEE IF CONT DATA CHK
4154  020632  001006                BNE     DCHKX           ;IF NOT: BR
4155  020634  005200                INC     R0              ;SEE IF DONE
4156  020636  001243                BNE     DCHK0           ;IF NOT: BR
4157  020640  005767  160130                TST     W2FLG
4158  020644  001401                BEQ     DCHKX
4159  020646  000207                RTS     PC
4160  020650  032777  100000  157714 DCHKX:  BIT     #100000,@SWR    ;SEE IF HALT ON ERROR
4161  020656  001405                BEQ     DCHKX1          ;IF NOT: BR
4162  020660  005767  160112                TST     DERFL           ;SEE IF DATA ERROR OCCURED
4163  020664  001402                BEQ     DCHKX1          ;IF NOT: BR
4164  020666  004767  004742                JSR     PC,STOP
```

```
 4165  020672  005067  160106          DCHKX1: CLR     CRCNT           ;CLEAR CHAR CNTR
 4166  020676  005067  157726                  CLR     HDRFL           ;CLEAR HEADER FLAG
 4167  020702  005067  160070                  CLR     DERFL           ;CLEAR DATA ERROR FLAG
 4168  020706  005067  160066                  CLR     PREFL           ;CLEAR PREAMBLE FLAG
 4169  020712  000207                          RTS     PC              ;RETURN
```

```
4170
4171                                        ;EVEN PARITY DATA CHECK*****
4172
4173  020714  012700  177400          DCHKE:  MOV     #-400,R0        ;SET NUMBER OF CHARACTERS
4174  020720  012701  036376                  MOV     #WBUFF,R1       ;R1=START OF WRITE BUFFER
4175  020724  012702  037010                  MOV     #RBUFF,R2       ;R2=START OF READ BUFFER
4176  020730  111105                  DCKE0:  MOVB    (R1),R5         ;GET EXPT DATA
4177  020732  005003                          CLR     R3
4178  020734  012704  000010                  MOV     #10,R4          ;SET NUMBER OF BITS
4179  020740  032705  000001          DCKE1:  BIT     #1,R5           ;SEE IF ONE BIT
4180  020744  001401                          BEQ     DCKE2           ;IF NOT: BR
4181  020746  005203                          INC     R3              ;COUNT ONE BITS FOR PARITY CHECK
4182  020750  005304                  DCKE2:  DEC     R4              ;SEE IF DONE
4183  020752  001402                          BEQ     DCKE3           ;IF SO: BR
4184  020754  006005                          ROR     R5              ;POINT TO NEXT BIT
4185  020756  000770                          BR      DCKE1
4186  020760  111105                  DCKE3:  MOVB    (R1),R5         ;GET EXPT DATA
4187  020762  042705  177400                  BIC     #177400,R5      ;MASK DATA FIELD
4188  020766  005703                          TST     R3
4189  020770  001003                          BNE     DCKE4           ;IF NO ONE BITS SET: BR
4190  020772  012705  100020                  MOV     #100020,R5
4191  020776  000405                          BR      DCKE5
4192  021000  032703  000001          DCKE4:  BIT     #1,R3           ;SEE IF ODD NUMBER OF ONE BITS
4193  021004  001402                          BEQ     DCKE5           ;IF NOT: BR
4194  021006  052705  100000                  BIS     #100000,R5      ;SET EVEN PARITY BIT=1
4195  021012  042712  077400          DCKE5:  BIC     #77400,(R2)     ;MASK DATA FIELD
4196  021016  020512                          CMP     R5,(R2)         ;SEE IF DATA + PARITY GOOD
4197  021020  001474                          BEQ     DCKE10          ;IF SO: BR
4198  021022  032777  020000  157542          BIT     #20000,@SWR     ;SEE IF ERROR PRINT
4199  021030  001070                          BNE     DCKE10          ;IF NOT: BR
4200  021032  005767  157572                  TST     HDRFL           ;SEE IF DONE HEADER
4201  021036  001004                          BNE     DCKE6           ;IF SO: BR
4202  021040  016704  157566                  MOV     EMADDR,R4
4203  021044  004767  003446                  JSR     PC,TTOUT        ;PRINT HEADER
4204  021050  005767  157722          DCKE6:  TST     DERFL           ;SEE IF FIRST BAD CHAR
4205  021054  001014                          BNE     DCKE7           ;IF NOT: BR
4206  021056  012704  035644                  MOV     #WMSG16,R4
4207  021062  004767  003430                  JSR     PC,TTOUT        ;PRINT BAD DATA TAG
4208  021066  012704  036071                  MOV     #WMSG32,R4
4209  021072  004767  003420                  JSR     PC,TTOUT        ;PRINT PATTERN TAG
4210  021076  016703  157710                  MOV     PATRN,R3
4211  021102  004767  003552                  JSR     PC,OCTP         ;PRINT PATTERN NUMBER
4212  021106  012767  000001  157662  DCKE7:  MOV     #1,DERFL        ;SET DATA ERROR FLAG
4213  021114  012767  000001  157506          MOV     #1,HDRFL        ;SET HEADER FLAG
4214  021122  012704  035670                  MOV     #WMSG21,R4
4215  021126  004767  003364                  JSR     PC,TTOUT        ;PRINT CHAR NUMBER TAG
4216  021132  016703  157646                  MOV     CRCNT,R3
4217  021136  004767  003516                  JSR     PC,OCTP         ;ORINT CHAR NUMBER
4218  021142  012704  035656                  MOV     #WMSG17,R4
4219  021146  004767  003344                  JSR     PC,TTOUT        ;PRINT GOOD DATA TAG
4220  021152  110503                          MOVB    R5,R3
4221  021154  004767  004244                  JSR     PC,DOUT         ;PRINT EXPT DATA
4222  021160  010503                          MOV     R5,R3
4223  021162  004767  000064                  JSR     PC,DCKEP        ;GO PRINT PARITY BIT
4224  021166  012704  035663                  MOV     #WMSG20,R4
4225  021172  004767  003320                  JSR     PC,TTOUT        ;PRINT BAD TAG
```

```
 4226  021176  111203                        MOVB    (R2),R3
 4227  021200  004767  004220                JSR     PC,DOUT         ;PRINT BAD DATA
 4228  021204  011203                        MOV     (R2),R3
 4229  021206  004767  000040                JSR     PC,DCKEP        ;GO PRINT PARITY BIT
 4230  021212  005201              DCKE10:   INC     R1
 4231  021214  005722                        TST     (R2)+           ;BUMP POINTERS
 4232  021216  005267  157562                INC     CRCNT           ;BUMP CHAR CNTR
 4233  021222  032777  000400  157342        BIT     #400,@SWR       ;SEE IF CONTINUE DATA CHECK
 4234  021230  001402                        BEQ     DCKE11          ;IF SO: BR
 4235  021232  000167  177412                JMP     DCHKX           ;GO TO END OF DATA CHECK
 4236  021236  005200              DCKE11:   INC     R0              ;SEE IF DONE
 4237  021240  001402                        BEQ     DCKE12          ;IF SO: BR
 4238  021242  000167  177462                JMP     DCKE0           ;ELSE CONTINUE
 4239  021246  000167  177376      DCKE12:   JMP     DCHKX           ;GO TO END OF DATA CHECK
 4240  021252  012767  000240  157344  DCKEP:  MOV     #240,TOB
 4241  021260  004767  003346                JSR     PC,TOG          ;SPACE
 4242  021264  012767  000260  157332        MOV     #260,TOB        ;SET PAR=0
 4243  021272  005703                        TST     R3              ;SEE IF PARITY REALLY=0
 4244  021274  100002                        BPL     DCKEP0          ;IF SO: BR
 4245  021276  005267  157322                INC     TOB             ;ELSE SET TO 1
 4246  021302  004767  003324      DCKEP0:   JSR     PC,TOG          ;PRINT PARITY BIT
 4247  021306  000207                        RTS     PC              ;RETURN
 4248
```

```
4249
4250                                        ;PREAMPLE/POSTAMPLE CHECK*******
4251
4252  021310  012700  000051          PSCHK:  MOV     #51,R0          ;SET SIZE OF POSTAMBLE
4253  021314  012701  036254                  MOV     #POST,R1        ;SET POINTER TO POSTAMBLE
4254  021320  005067  157304                  CLR     HDRFL           ;CLEAR HEADER FLAG
4255  021324  005067  157454                  CLR     CRCNT           ;CLEAR CHAR CNTR
4256  021330  005067  157442                  CLR     DERFL           ;CLEAR DATA ERROR FLAG
4257  021334  000167  000016                  JMP     PD0             ;GO CHECK POSTAMPLE
4258
4259  021340  012700  000051          PRCHK:  MOV     #51,R0          ;SET SIZE OF PREAMBLE
4260  021344  012701  036132                  MOV     #PRE,R1         ;SET POINTER TO PREAMBLE
4261  021350  012702  037010                  MOV     #RBUFF,R2       ;SET POINTER TO START OF READ BUFFER
4262  021354  022122                          CMP     (R1)+,(R2)+     ;BUMP ADDRESS POINTERS
4263  021356  121112          PD0:    CMPB    (R1),(R2)       ;CHECK DATA
4264  021360  001004                  BNE     PD1             ;IF NOT GOOD: BR
4265  021362  126162  000001  000001          CMPB    1(R1),1(R2)     ;COMPARE COMPLIMENT BYTE
4266  021370  001477                  BEQ     PD5             ;IF GOOD: BR
4267  021372  032777  020000  157172  PD1:    BIT     #20000,@SWR     ;SEE IF PRINT INHIBIT
4268  021400  001073                  BNE     PD5             ;IF SO: BR
4269  021402  005767  157222                  TST     HDRFL           ;SEE IF DONE HEADER
4270  021406  001020                  BNE     PD4             ;IF SO: BR
4271  021410  016704  157216                  MOV     EMADDR,R4
4272  021414  004767  003076                  JSR     PC,TTOUT        ;PRINT TEST HEADER
4273  021420  005767  157354                  TST     PREFL           ;SEE IF PREAMBLE CHECK
4274  021424  001403                  BEQ     PD2             ;IF NOT: BR
4275  021426  012704  036015                  MOV     #WMSG29,R4      ;SET POSTAMBLE HEADER
4276  021432  000402                  BR      PD3
4277  021434  012704  035777          PD2:    MOV     #WMSG28,R4      ;SET PREAMBLE HEADER
4278  021440  004767  003052          PD3:    JSR     PC,TTOUT        ;PRINT HEADER
4279  021444  005267  157160                  INC     HDRFL
4280  021450  012704  035670          PD4:    MOV     #WMSG21,R4
4281  021454  004767  003036                  JSR     PC,TTOUT        ;PRINT CHAR NUMBER TAG
4282  021460  016703  157320                  MOV     CRCNT,R3
4283  021464  004767  003170                  JSR     PC,OCTP         ;PRINT CHAR NUMBER
4284  021470  012704  035656                  MOV     #WMSG17,R4
4285  021474  004767  003016                  JSR     PC,TTOUT        ;PRINT GOOD TAG
4286  021500  116103  000001                  MOVB    1(R1),R3
4287  021504  004767  003714                  JSR     PC,DOUT         ;PRINT GOOD CHAR
4288  021510  012767  000240  157106          MOV     #240,TOB
4289  021516  004767  003110                  JSR     PC,TOG
4290  021522  111103                          MOVB    (R1),R3
4291  021524  004767  003674                  JSR     PC,DOUT         ;PRINT COMPLIMENT
4292  021530  012704  035663                  MOV     #WMSG20,R4
4293  021534  004767  002756                  JSR     PC,TTOUT        ;PRINT BAD TAG
4294  021540  116203  000001                  MOVB    1(R2),R3
4295  021544  004767  003654                  JSR     PC,DOUT         ;PRINT BAD CHAR
4296  021550  012767  000240  157046          MOV     #240,TOB
4297  021556  004767  003050                  JSR     PC,TOG
4298  021562  111203                          MOVB    (R2),R3
4299  021564  004767  003634                  JSR     PC,DOUT         ;PRINT COMPLIMENT
4300  021570  022122          PD5:    CMP     (R1)+,(R2)+     ;BUMP ADDRESS POINTERS
4301  021572  005267  157206                  INC     CRCNT           ;BUMP CHAR NUMBER
4302  021576  005300                          DEC     R0              ;SEE IF DONE
4303  021600  001266                          BNE     PD0             ;IF NOT. BR
4304  021602  005767  157172                  TST     PREFL           ;SEE IF PREAMBLE
```

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 4305  021606  001402                    BEQ     PD6             ;IF SO:  BR
 4306  021610  000167  177034            JMP     DCHKX           ;GO TO EXIT ROUTINE
 4307  021614  005267  157160    PD6:    INC     PREFL           ;SET PREAMBLE FLAG
 4308  021620  005067  157004            CLR     HDRFL           ;CLEAR HEADER FLAG
 4309  021624  005067  157154            CLR     CRCNT           ;CLEAR CHAR CNTR
 4310  021630  005067  157142            CLR     DERFL           ;CLEAR DATA ERROR FLAG
 4311  021634  000167  000000            JMP     W1DCHK          ;GO CHECK WRAP 1 DATA
 4312
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4313
4314                                        ;WAM 1 PE DATA CHECK*****
4315
4316  021640  012700  177400          W1DCHK. MOV   #-400,R0        ;SET NUMBER OF CHAR TO CHECK
4317  021644  012701  036376                  MOV   #WBUFF,R1       ;SET WRITE DATA POINTER
4318  021650  012702  037010                  MOV   #RBUFF,R2       ;SET READ DATA POINTER
4319  021654  062702  000124                  ADD   #124,R2         ;POINT TO START OF DATA
4320  021660  005767  157110                  TST   W2FLG           ;SEE IF WRAP 2
4321  021664  001401                          BEQ   W1D0            ;IF NOT WAM 2: BR
4322  021666  005302                          DEC   R2              ;RESET POINTER
4323  021670  111105          W1D0:   MOVB  (R1),R5
4324  021672  120512                  CMPB  R5,(R2)         ;CHECK DATA
4325  021674  001007                  BNE   W1D1            ;IF NOT GOOD: BR
4326  021676  005767  157072                  TST   W2FLG           ;SEE IF WRAP 2
4327  021702  001001                          BNE   W1D0A           ;IF SO: BR
4328  021704  105105                          COMB  R5              ;COMPLIMENT EXPT DATA
4329  021706  120562  000001          W1D0A:  CMPB  R5,1(R2)        ;CHECK COMPLIMENT DATA
4330  021712  001510                          BEQ   W1D3            ;IF GOOD: BR
4331  021714  032777  020000  156650  W1D1:   BIT   #20000,@SWR    ;SEE IF PRINT INHIBIT
4332  021722  001104                          BNE   W1D3            ;IF SO: BR
4333  021724  005767  156700                  TST   HDRFL           ;SEE IF DONE HEADER
4334  021730  001020                          BNE   W1D2            ;IF SO: BR
4335  021732  016704  156674                  MOV   EMADDR,R4
4336  021736  004767  002554                  JSR   PC.TTOUT        ;PRINT TEST HEADER
4337  021742  012704  035644                  MOV   #WMSG16,R4
4338  021746  004767  002544                  JSR   PC,TTOUT        ;PRINT BAD DATA TAG
4339  021752  012704  036071                  MOV   #WMSG32,R4
4340  021756  004767  002534                  JSR   PC,TTOUT        ;PRINT PATRN TAG
4341  021762  016703  157024                  MOV   PATRN,R3
4342  021766  004767  002666                  JSR   PC,OCTP         ;PRINT PATTERN NUMBER
4343  021772  012767  000001  156630  W1D2:   MOV   #1,HDRFL        ;SET HEADER FLAG
4344  022000  012704  035670                  MOV   #WMSG21,R4
4345  022004  004767  002506                  JSR   PC,TTOUT        ;PRINT CHAR NUMBER TAG
4346  022010  016703  156770                  MOV   CRCNT,R3
4347  022014  004767  002640                  JSR   PC,OCTP         ;PRINT CHAR NUMBER
4348  022020  012704  035656                  MOV   #WMSG17,R4
4349  022024  004767  002466                  JSR   PC,TTOUT        ;PRNT GOOD TAG
4350  022030  111105                          MOVB  (R1),R5
4351  022032  110503                          MOVB  R5,R3           ;GET GOOD CHAR
4352  022034  005767  156734                  TST   W2FLG           ;SEE IF WRAP 2
4353  022040  001001                          BNE   W1D2A           ;IF SO: BR
4354  022042  105103                          COMB  R3              ;ELSE COMPLIMENT CHAR
4355  022044  004767  003354          W1D2A:  JSR   PC,DOUT         ;PRINT CHARACTER
4356  022050  012767  000240  156546          MOV   #240,TOB
4357  022056  004767  002550                  JSR   PC,TOG          ;SPACE
4358  022062  110503                          MOVB  R5,R3
4359  022064  004767  003334                  JSR   PC,DOUT         ;PRINT CHAR
4360  022070  012704  035663                  MOV   #WMSG20,R4
4361  022074  004767  002416                  JSR   PC,TTOUT        ;PRINT BAD TAG
4362  022100  116203  000001                  MOVB  1(R2),R3
4363  022104  004767  003314                  JSR   PC,DOUT         ;PRINT BAD CHAR
4364  022110  012767  000240  156506          MOV   #240,TOB
4365  022116  004767  002510                  JSR   PC,TOG          ;SPACE
4366  022122  111203                          MOVB  (R2),R3
4367  022124  004767  003274                  JSR   PC,DOUT         ;PRINT CHAR
4368  022130  005267  156642                  INC   DERFL           ;SET DATA ERROR FLAG
```

```
 4369  022134  122122           W1D3:   CMPB    (R1)+,(R2)+     ;BUMP ADDRESS
 4370  022136  105722                   TSTB    (R2)+           ;BUMP ADDRESS
 4371  022140  005267  156640           INC     CRCNT           ;BUMP CHAR CNTR
 4372  022144  000406                   BR      W1D5
 4373  022146  005767  156622   W1D4:   TST     W2FLG           ;SEE IF WRAP 2
 4374  022152  001401                   BEQ     W1D4A           ;IF NOT: BR
 4375  022154  000207                   RTS     PC              ;ELSE RETURN
 4376  022156  000167  177126   W1D4A:  JMP     PSCHK           ;GO CHECK POSTAMBLE
 4377  022162  005200           W1D5:   INC     R0
 4378  022164  001770                   BEQ     W1D4
 4379  022166  000167  177476           JMP     W1D0
 4380
 4381                                    ;PREAMBLE/POSTAMBLE GENERATE SUBROUTINE**********
 4382
 4383  022172  012700  000050   PPGEN:  MOV     #50,R0          ;SET SIZE OF PREAMBLE
 4384  022176  012701  036132           MOV     #PRE,R1
 4385  022202  005721                   TST     (R1)+           ;SET ADDRESS OF PRE
 4386  022204  012721  177400   PPG0:   MOV     #177400,(R1)+   ;FILL TABLE
 4387  022210  005300                   DEC     R0              ;SEE IF DONE
 4388  022212  001374                   BNE     PPG0            ;IF NOT: BR
 4389  022214  012701  036254           MOV     #POST,R1        ;SET ADDRESS OF POST
 4390  022220  012700  000050           MOV     #50,R0          ;SET SIZE OF POST
 4391  022224  012721  000377           MOV     #377,(R1)+      ;SET SYNC CHAR
 4392  022230  012721  177400   PPG1:   MOV     #177400,(R1)+   ;FILL TABLE
 4393  022234  005300                   DEC     R0              ;SEE IF DONE
 4394  022236  001374                   BNE     PPG1            ;IF NOT: BR
 4395  022240  000207                   RTS     PC              ;RETURN
```

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4396
4397                                        ;END OF RECORD FORCE SUBROUTINE*****
4398
4399  022242  005267  156440          EORPA:  INC     TEMP2           ;SET WRAP FLAG
4400  022246  017700  156262          EORP:   MOV     @MR,R0          ;GET MAINT REG
4401  022252  042700  000036                  BIC     #36,R0          ;CLEAR CURRENT OP CODE
4402  022256  052700  000024                  BIS     #24,R0          ;SET EOR CLEAR OP CODE
4403  022262  010077  156246                  MOV     R0,@MR          ;DO EOR
4404  022266  042777  000037  156240          BIC     #37,@MR         ;CLEAR EOR AND MM
4405  022274  005000                          CLR     R0
4406  022276  012701  000002                  MOV     #2,R1
4407  022302  032777  000001  156200  EORP1:  BIT     #1,@C1          ;SEE IF GO GONE
4408  022310  001431                          BEQ     EORP2           ;IF SO: BR
4409  022312  005300                          DEC     R0
4410  022314  001372                          BNE     EORP1           ;AWAIT GO RESET
4411  022316  005301                          DEC     R1
4412  022320  001370                          BNE     EORP1
4413  022322  032777  020000  156242          BIT     #20000,@SWR     ;SEE IF ERROR PRINT INHIBIT
4414  022330  001021                          BNE     EORP2           ;IF SO: BR
4415  022332  005767  156272                  TST     HDRFL           ;SEE IF DONE HEADER
4416  022336  001004                          BNE     EORP1A          ;IF SO: BR
4417  022340  016704  156266                  MOV     EMADDR,R4
4418  022344  004767  002146                  JSR     PC,TTOUT        ;PRINT HEADER
4419  022350  012704  036034          EORP1A: MOV     #WMSG31,R4
4420  022354  004767  002136                  JSR     PC,TTOUT        ;PRINT EOR GO BIT ERROR
4421  022360  032777  100000  156204          BIT     #100000,@SWR    ;SEE IF HALT ON ERROR
4422  022366  001402                          BEQ     EORP2           ;IF NOT: BR
4423  022370  004767  003240                  JSR     PC,STOP
4424  022374  005767  156306          EORP2:  TST     TEMP2           ;SEE IF WAM
4425  022400  001014                          BNE     EORPX           ;IF NOT: BR
4426  022402  032777  000200  156162          BIT     #200,@SWR       ;SEE IF STATUS CHECK
4427  022410  001002                          BNE     EORP3           ;IF NOT: BR
4428  022412  004767  175154                  JSR     PC,WSTCK        ;ELSE GO CHECK STATUS
4429  022416  032777  000400  156146  EORP3:  BIT     #400,@SWR       ;SEE IF DATA CHECK
4430  022424  001002                          BNE     EORPX           ;IF NOT: BR
4431  022426  004767  175430                  JSR     PC,DCHK         ;ELSE GO CHECK DATA
4432  022432  005067  156250          EORPX:  CLR     TEMP2           ;CLEAR FLAG
4433  022436  000207                          RTS     PC              ;RETURN
4434
```

```
4435                                        ;LOGIC TEST ADDRESSING ERROR SUBROUTINE**********
4436
4437  022440  005067  156262        LTGER3: CLR     EXFL
4438  022444  012767  030131  156230        MOV     #MSG51,ERADD
4439  022452  012767  000001  156276  LTGER0: MOV     #1,ADDFL        ;SET NO ADDRESS FLAG
4440  022460  005067  156212        LTGER:  CLR     PFLG            ;CLEAR PRINT FLAG
4441  022464  032777  020000  156100        BIT     #20000,@SWR     ;SEE IF SHOULD PRINT
4442  022472  001402                        BEQ     LTGA            ;IF SO: BR
4443  022474  000167  000224                JMP     LTGX            ;ELSE GO TO EXIT
4444  022500  005767  156124        LTGA:   TST     HDRFL           ;SEE IF PRINTED HEADER
4445  022504  001004                        BNE     LTGA1           ;IF SO: BR
4446  022506  016704  156120                MOV     EMADDR,R4
4447  022512  004767  002000                JSR     PC,TTOUT        ;PRINT TEST HEADER
4448  022516  012767  000001  156104  LTGA1: MOV     #1,HDRFL        ;SET HEADER FLAG
4449  022524  016704  156152                MOV     ERADD,R4
4450  022530  004767  001762                JSR     PC,TTOUT        ;PRINT CONDITION ERROR
4451  022534  005767  156216                TST     ADDFL
4452  022540  001003                        BNE     LTGA2
4453  022542  010103                        MOV     R1,R3
4454  022544  004767  002110                JSR     PC,OCTP         ;PRINT ADDRESS
4455  022550  005767  156152        LTGA2:  TST     EXFL
4456  022554  001412                        BEQ     LTGC            ;IF NO STATUS: BR
4457  022556  012704  026430                MOV     #MSG6,R4
4458  022562  022767  000001  156136        CMP     #1.EXFL         ;EXPT-NOT RCVD
4459  022570  001402                        BEQ     LTGB
4460  022572  012704  026447                MOV     #MSG7,R4        ;RCVD-NOT EXPT
4461  022576  004767  001714        LTGB:   JSR     PC,TTOUT        ;PRINT STATUS
4462  022602  005267  156070        LTGC:   INC     PFLG
4463  022606  005767  156144                TST     ADDFL           ;SEE IF ADD TST
4464  022612  001430                        BEQ     LTGD            ;IF SO: BR
4465  022614  005767  156134                TST     T24FL           ;SEE IF TEST 24
4466  022620  001423                        BEQ     LTGC0           ;IF NOT: BR
4467  022622  012704  035764                MOV     #WMSG27,R4
4468  022626  004767  001664                JSR     PC,TTOUT        ;PRINT DATA TAG
4469  022632  012704  026726                MOV     #MSG12,R4
4470  022636  004767  001654                JSR     PC,TTOUT        ;PRINT EXPT TAG
4471  022642  012703  177777                MOV     #-1,R3
4472  022646  004767  001776                JSR     PC,OCTPE        ;PRINT EXPT
4473  022652  012704  026735                MOV     #MSG13,R4
4474  022656  004767  001634                JSR     PC,TTOUT        ;PRINT RCVD TAG
4475  022662  010103                        MOV     R1,R3           ;GET RCVD
4476  022664  004767  001760                JSR     PC,OCTPE        ;PRINT RCVD
4477  022670  004767  000102        LTGC0:  JSR     PC,REGP         ;PRINT REGISTERS
4478  022674  032777  010000  155670  LTGD:  BIT     #10000,@SWR
4479  022702  001010                        BNE     LTGX
4480  022704  012704  026777                MOV     #MSG16,R4
4481  022710  004767  001602                JSR     PC,TTOUT
4482  022714  016703  155772                MOV     ITCNT,R3        ;PRINT ITERATION
4483  022720  004767  001734                JSR     PC,OCTP
4484  022724  005777  155642        LTGX:   TST     @SWR
4485  022730  100002                        BPL     LTGXA           ;IF NOT STOP ON ERROR: BR
4486  022732  004767  002676                JSR     PC,STOP
4487  022736  005767  155734        LTGXA:  TST     PFLG
4488  022742  001006                        BNE     LTGXX           ;IF PRINTED: BR
4489  022744  032777  020000  155620        BIT     #20000,@SWR
4490  022752  001002                        BNE     LTGXX           ;IF STILL NO PRINT: BR
```

```
 4491  022754  000167  177520                 JMP     LTGA            ;ELSE GO PRINT ERROR
 4492  022760  005067  155772       LTGXX:    CLR     ADDFL           ;CLEAR ADDRESS FLAG
 4493  022764  005067  155736                 CLR     EXFL
 4494  022770  000167  001044                 JMP     SCOPE
 4495  022774  000207                         RTS     PC              ;EXIT
 4496
 4497                                 ;SUBROUTINE TO PRINT MAJOR REGISTERS**********
 4498
 4499  022776  012704  027754       REGP:     MOV     #MSG46,R4
 4500  023002  004767  001510                 JSR     PC,TTOUT        ;PRINT REGISTER HEADER
 4501  023006  017703  155476                 MOV     @C1,R3
 4502  023012  004767  001632                 JSR     PC,OCTPE
 4503  023016  017703  155470                 MOV     @WC,R3
 4504  023022  004767  001622                 JSR     PC,OCTPE
 4505  023026  017703  155462                 MOV     @BA,R3
 4506  023032  004767  001612                 JSR     PC,OCTPE
 4507  023036  017703  155454                 MOV     @FC,R3
 4508  023042  004767  001602                 JSR     PC,OCTPE
 4509  023046  017703  155446                 MOV     @CS,R3
 4510  023052  004767  001572                 JSR     PC,OCTPE
 4511  023056  017703  155440                 MOV     @DS,R3
 4512  023062  004767  001562                 JSR     PC,OCTPE                ;PRINT REGISTERS
 4513  023066  017703  155432                 MOV     @ER,R3
 4514  023072  004767  001552                 JSR     PC.OCTPE
 4515  023076  017703  155424                 MOV     @AS,R3
 4516  023102  004767  001542                 JSR     PC,OCTPE
 4517  023106  017703  155422                 MOV     @MR,R3
 4518  023112  004767  001532                 JSR     PC,OCTPE
 4519  023116  017703  155420                 MOV     @TC,R3
 4520  023122  004767  001522                 JSR     PC,OCTPE
 4521  023126  000207                         RTS     PC
 4522
 4523
```

```
4524                                        ;DRIVE CLEAR SUBROUTINE*********
4525
4526  023130  012704  040000        DRVCLR: MOV     #40000,R4
4527  023134  005304                DCD:    DEC     R4
4528  023136  001376                        BNE     DCD             ;DELAY
4529  023140  005067  155532                CLR     PFLG
4530  023144  004767  000222                JSR     PC,ATTN         ;GO SEE OF ATTN SET
4531  023150  012777  000011  155332        MOV     #11,@C1         ;ISSUE DRIVE CLEAR
4532  023156  005000                        CLR     R0
4533  023160  032777  000200  155334 DCA:    BIT     #200,@DS        ;SEE IF DRY
4534  023166  001002                        BNE     DCA0
4535  023170  005300                        DEC     R0
4536  023172  001372                        BNE     DCA             ;WAIT FOR DRY
4537  023174  032777  040000  155320 DCA0:   BIT     #40000,@DS      ;SEE IF ERR RESET
4538  023202  001024                        BNE     DCE             ;IF NOT: BR
4539  023204  005777  155314                TST     @ER             ;SEE IF ERROR REGISTER RESET
4540  023210  001021                        BNE     DCE             ;IF NOT: BR
4541  023212  005777  155304                TST     @DS             ;SEE IF ATA RESET
4542  023216  100416                        BMI     DCE             ;IF NOT: BR
4543  023220  012703  000001                MOV     #1,R3           ;SET TEST BIT
4544  023224  016704  155404                MOV     DRVN,R4         ;GET DRIVE NUMBER
4545  023230  005704                        TST     R4              ;SEE IF DRIVE 0
4546  023232  001404                        BEQ     DCC             ;IF SO: BR
4547  023234  000241                DCB:    CLC
4548  023236  006103                        ROL     R3              ;POSITION TEST BIT PER DRIVE NUMBER
4549  023240  005304                        DEC     R4              ;SEE IF DONE
4550  023242  001374                        BNE     DCB             ;IF NOT: BR
4551  023244  030377  155256        DCC:    BIT     R3,@AS          ;SEE IF ATTEN IS RESET
4552  023250  001001                        BNE     DCE             ;IF NOT: BR
4553  023252  000207                        RTS     PC              ;RETURN
4554  023254  032777  020000  155310 DCE:    BIT     #20000,@SWR     ;SEE IF ERROR PRINT INHIBIT
4555  023262  001017                        BNE     DCEX            ;IF SO: BR
4556  023264  005767  155340                TST     HDRFL           ;SEE IF PRINT HEADER
4557  023270  001004                        BNE     DCEA            ;IF NOT: BR
4558  023272  016704  155334                MOV     EMADDR,R4
4559  023276  004767  001214                JSR     PC,TTOUT        ;PRINT HEADER
4560  023302  012704  030060        DCEA:   MOV     #MSG47,R4
4561  023306  004767  001204                JSR     PC,TTOUT        ;PRINT DRIVE CLEAR ERROR
4562  023312  004767  177460                JSR     PC,*REGP        ;PRINT REGISTERS
4563  023316  005267  155354                INC     PFLG            ;SET PRINTED FLAG
4564  023322  005777  155244        DCEX:   TST     @SWR            ;SEE IF HALT ON ERROR
4565  023326  100002                        BPL     DCEXA           ;IF NOT: BR
4566  023330  004767  002300                JSR     PC,STOP
4567  023334  005767  155336        DCEXA:  TST     PFLG            ;SEE IF HAVE PRINTED
4568  023340  001006                        BNE     DCEXX           ;IF SO: BR
4569  023342  032777  020000  155222        BIT     #20000,@SWR     ;SEE IF SHOULD PRINT
4570  023350  001002                        BNE     DCEXX           ;IF NOT: BR
4571  023352  000167  177676                JMP     DCE             ;ELSE PRINT THIS ERROR
4572  023356  012767  023130  155336 DCEXX:  MOV     #DRVCLR,SCOLP   ;SET SCOPE LOOP ADDRESS
4573  023364  000167  000450                JMP     SCOPE           ;GO DO SCOPE LOOP
4574  023370  000207                        RTS     PC              ;RETURN
```

```
4575                                            ;COMPOSITE ERROR CHECK SUBROUTINE**********
4576
4577  023372  005777  155124          ATTN:   TST     @DS             ;SEE IF ATA SET
4578  023376  001005                  BNE     ATTA            ;IF SO: BR
4579  023400  012767  027416  155302          MOV     #MSG32,TEMP3
4580  023406  000167  000064                JMP     ATTP            ;ELSE PRINT ERROR
4581  023412  032777  040000  155102  ATTA:   BIT     #40000,@DS      ;SEE IF COMPOSITE ERROR SET
4582  023420  001005                  BNE     ATTB            ;IF SO: BR
4583  023422  012767  027400  155260          MOV     #MSG31,TEMP3
4584  023430  000167  000042                JMP     ATTP            ;ELSE PRINT ERROR
4585  023434  012703  000001          ATTB:   MOV     #1,R3           ;SET TEST BIT
4586  023440  012767  027434  155242          MOV     #MSG33,TEMP3
4587  023446  016704  155162                MOV     DRVN,R4         ;GET DRIVE NUMBER
4588  023452  005704                  TST     R4              ;SEE IF DRIVE 0
4589  023454  001404                  BEQ     ATTD            ;IF SO: BR
4590  023456  000241          ATTC:   CLC
4591  023460  006103                  ROL     R3              ;POSITION TEST BIT
4592  023462  005304                  DEC     R4              ;SEE IF DONE
4593  023464  001374                  BNE     ATTC            ;IF NOT: BR
4594  023466  030377  155034  ATTD:   BIT     R3,@AS          ;SEE IF ATTEN SUMMARY SET
4595  023472  001401                  BEQ     ATTP            ;IF NOT: BR
4596  023474  000207                  RTS     PC              ;ELSE RETURN
4597  023476  032777  020000  155066  ATTP:   BIT     #20000,@SWR     ;SEE IF PRINT INHIBIT
4598  023504  001021                  BNE     ATTX            ;IF SO: BR
4599  023506  005767  155116                TST     HDRFL           ;SEE IF DONE HEADER
4600  023512  001004                  BNE     ATTPA           ;IF SO: BR
4601  023514  016704  155112                MOV     EMADDR,R4
4602  023520  004767  000772                JSR     PC,TTOUT        ;PRINT HEADER
4603  023524  016704  155160          ATTPA:  MOV     TEMP3,R4
4604  023530  004767  000762                JSR     PC,TTOUT        ;PRINT ERROR TYPE
4605  023534  004767  177236                JSR     PC,REGP         ;PRINT REGISTERS
4606  023540  005267  155132                INC     PFLG            ;SET PRINT FLAG
4607  023544  005267  155060                INC     HDRFL           ;SET HEADER FLAG
4608  023550  005777  155016          ATTX:   TST     @SWR            ;SEE IF HALT ON ERROR
4609  023554  100002                  BPL     ATTXA           ;IF NOT: BR
4610  023556  004767  002052                JSR     PC,STOP
4611  023562  005767  155110          ATTXA:  TST     PFLG            ;SEE IF DONE PRINT
4612  023566  001006                  BNE     ATTXX           ;IF SO: BR
4613  023570  032777  020000  154774          BIT     #20000,@SWR     ;SEE IF SHOULD PRINT
4614  023576  001002                  BNE     ATTXX           ;IF NOT: BR
4615  023600  000167  177672                JMP     ATTP            ;ELSE PRINT ERROR
4616  023604  005067  155066          ATTXX:  CLR     PFLG            ;CLEAR PRINT FLAG
4617  023610  000207                  RTS     PC              ;RETURN
```

```
4618                                        ;LOGIC TEST REGISTER BIT ERROR SUBROUTIINE**********
4619
4620  023612  012767  000001  155126  LTGER2: MOV     #1,PEXFL        ;SET FLAG
4621  023620  005067  155052          LTGER1: CLR     PFLG            ;CLEAR PRINT FLAG
4622  023624  032777  020000  154740          BIT     #20000,@SWR     ;SEE IF PRINT ERRORS
4623  023632  001402                          BEQ     LTG1A           ;IF SO: BR
4624  023634  000167  000132                  JMP     LTG1X           ;ELSE GO TO EXIT
4625  023640  005767  154764          LTG1A:  TST     HDRFL           ;SEE IF PRINT HEADER
4626  023644  001004                          BNE     LTG1B           ;IF NOT: BR
4627  023646  016704  154760                  MOV     EMADDR,R4
4628  023652  004767  000640                  JSR     PC,TTOUT        ;PRINT HEADER
4629  023656  012767  000001  154744  LTG1B:  MOV     #1,HDRFL        ;SET FLAG
4630  023664  016704  155012                  MOV     ERADD,R4
4631  023670  004767  000622                  JSR     PC,TTOUT        ;PRINT ERROR CODE
4632  023674  005767  155046                  TST     PEXFL           ;SEE IF PRINT EXPT-RCVD
4633  023700  001016                          BNE     LTG1T           ;IF NOT: BR
4634  023702  012704  026726                  MOV     #MSG12,R4
4635  023706  004767  000604                  JSR     PC,TTOUT        ;PRINT EXPT TAG
4636  023712  010103                          MOV     R1,R3
4637  023714  004767  000740                  JSR     PC,OCTP         ;PRINT EXPT
4638  023720  012704  026735                  MOV     #MSG13,R4
4639  023724  004767  000566                  JSR     PC,TTOUT        ;PRINT RCVD TAG
4640  023730  010203                          MOV     R2,R3
4641  023732  004767  000722                  JSR     PC,OCTP         ;PRINT RCVD
4642  023736  032777  010000  154626  LTG1T:  BIT     #10000,@SWR
4643  023744  001010                          BNE     LTG1C
4644  023746  012704  026777                  MOV     #MSG16,R4
4645  023752  004767  000540                  JSR     PC,TTOUT
4646  023756  016703  154730                  MOV     ITCNT,R3
4647  023762  004767  000672                  JSR     PC,OCTP         ;PRINT ITERATION
4648  023766  005267  154704          LTG1C:  INC     PFLG
4649  023772  005777  154574          LTG1X:  TST     @SWR
4650  023776  100002                          BPL     LTG1X1          ;IF NOT STOP ON ERROR: BR
4651  024000  004767  001630                  JSR     PC,STOP
4652  024004  005767  154666          LTG1X1: TST     PFLG
4653  024010  001006                          BNE     LTG1XX          ;IF HAVE PRINTED: BR
4654  024012  032777  020000  154552          BIT     #20000,@SWR
4655  024020  001002                          BNE     LTG1XX          ;IF STILL NO PRINT: BR
4656  024022  000167  177612                  JMP     LTG1A           ;ELSE PRINT ERROR
4657  024026  005067  154714          LTG1XX: CLR     PEXFL           ;CLEAR EXPT-RCVD FLAG
4658  024032  000167  000002                  JMP     SCOPE           ;GO TO SCOPE
4659  024036  000207                          RTS     PC              ;RETURN
4660
```

```
4661
4662                                        ;SCOPE LOOP ON ERROR SUBROUTINE**********
4663
4664  024040  004767  001050        SCOPE:  JSR     PC,CKSWR        ;CHECK FOR CONTROL G
4665  024044  032777  040000  154520        BIT     #40000,@SWR     ;SEE IF LOOP ON ERROR
4666  024052  001001                        BNE     SCOPE1          ;IF SO: BR
4667  024054  000207                        RTS     PC              ;ELSE EXIT
4668  024056  005726                SCOPE1: TST     (SP)+           ;RESET STACK
4669  024060  000177  154636                JMP     @SCOLP          ;LOOP ON ERROR
4670
4671                                        ;TEST ITERATION SUBROUTINE**********
4672
4673                                ;       ************************************************************
4674                                ;               CHECK FOR END OF PASS INDICATOR
4675                                ;               TO INSURE QUICK VERIFY
4676
4677  024064  005767  154740                TST     PAFLG           ;PASS FLAG INDICATOR SET?
4678  024070  001404                        BEQ     ITER0           ;BRANCH - IF NO
4679
4680                                ;       ************************************************************
4681
4682  024072  032777  010000  154472  ITER:   BIT     #10000,@SWR     ;SEE IF ITERATIONS
4683  024100  001403                        BEQ     ITER1           ;IF SO: BR
4684  024102  005067  154604        ITER0:  CLR     ITCNT           ;CLEAR ITERATION COUNTER
4685  024106  000207                        RTS     PC              ;ELSE EXIT
4686  024110  005267  154576        ITER1:  INC     ITCNT           ;BUMP COUNTER
4687  024114  026767  154572  154466        CMP     ITCNT,ITAMT     ;SEE IF DONE ALL
4688  024122  001767                        BEQ     ITER0           ;IF SO: BR
4689  024124  005726                        TST     (SP)+           ;RESET STACK
4690  024126  017700  154572                MOV     @ITRLP,R0       ;SET ITERATION POINTER
4691  024132  000110                        JMP     (R0)            ;GO ITERATE
4692
4693                                        ;MANUAL INTERVENTION INHIBIT*********
4694
4695  024134  012704  027604        INMT:   MOV     #MSG43,R4
4696  024140  004767  000352                JSR     PC,TTOUT        ;GO PRINT INHIB MSG
4697  024144  004767  001464                JSR     PC,STOP
4698  024150  000167  156276                JMP     TSCD2           ;RETURN TO SCHED
4699
```

```
4700
4701                                        ;INITIALIZE SUBROUTINE**********
4702
4703  024154  012777  000040  154336  INIT1:  MOV     #40,@CS         ;INIT
4704  024162  016777  154446  154330  INIT2:  MOV     DRVN,@CS        ;SELECT DRIVE
4705  024170  016777  154500  154344           MOV     SLVN,@TC        ;SELECT SLAVE
4706  024176  000207                           RTS     PC              ;RETURN
4707
4708                                        ;MANUAL INSTRUCTION SUBROUTINE**********
4709
4710  024200  004767  000312          INST:    JSR     PC,TTOUT        ;PRINT INSTRUCTION
4711  024204  012704  034116                   MOV     #MMSG0,R4
4712  024210  004767  000302                   JSR     PC,TTOUT        ;PRINT REPLY
4713  024214  012705  000710                   MOV     #TEMP3,R5
4714  024220  012701  000001                   MOV     #1,R1
4715  024224  012702  177777                   MOV     #-1,R2
4716  024230  012703  000000                   MOV     #0,R3
4717  024234  004767  000020                   JSR     PC,TTR          ;AWAIT REPLY
4718  024240  000207                           RTS     PC              ;EXIT
4719
4720                                        ;MAG TAPE INTERRUPT HANDLER**********
4721
4722  024242  022626          MTINT:   CMP     (SP)+,(SP)+     ;RESET STACK POINTER
4723  024244  000240                   NOP
4724  024246  000240                   NOP
4725  024250  000177  154424           JMP     @RTRN           ;RETURN TO CALLER
4726
4727                                        ;TTY INTERRUPT HANDLER**********
4728
4729  024254          TTINT:
4730  024254  000240                   NOP
4731  024256  000002                   RTI
4732
```

```
                                        ;*********************************************************
                                        ;TTY ENTRY SUBROUTINE:
                                        ;
                                        ;THIS SUBROUTINE IS USED BY THE TEST CONDITION
                                        ;ENTRY ROUTINE TO READ THE RESPONSE ENTERED
                                        ;AT THE TTY AND CHECK THEM FOR LEGALITY AND
                                        ;LIMITS.  ALL RESPONSE MUST BE TYPED IN OCTAL
                                        ;(0-7) AND MUST FALL WITHIN THE LIMITS SET BY
                                        ;THE CALLING ROUTINE.
                                        ;IF AN ENTRY IS ILLEGAL OR OUTSIDE THE LIMITS,
                                        ;A QUESTION MARK IS TYPED (?) AND THE RESPONSE
                                        ;MAY BE REENTERED.
                                        ;ENTRIES MAY NOT EXCEED SIX (6) CHARACTERS AND
                                        ;MAY BE TERMINATED AT LESS THAN SIX BY TYPING A
                                        ;CARRIAGE RETURN
                                        ;*********************************************************

024260  005067  154420        TTR:    CLR     TEMP1           ;CLEAR FIRST CHARACTER FLAG
024264  005000                        CLR     R0
024266  004767  000152        TTR0:   JSR     PC,TTIN         ;GO READ CHARACTER
024272  122767  000215  154326        CMPB    #215,TIB        ;SEE IF CR
024300  001005                        BNE     TTR1            ;IF NOT: BR
024302  005767  154376                TST     TEMP1           ;SEE IF FIRST CHARACTER
024306  001446                        BEQ     TTR5            ;IF SO: BR
024310  000167  000066                JMP     TTR2            ;ELSE GO LOAD VALUE
024314  122767  000260  154304  TTR1: CMPB    #260,TIB        ;SEE IF CHAR IS LESS THAN 0
024322  101402                        BLOS    TTR1A           ;IF NOT: BR
024324  000167  000076                JMP     TINER           ;ELSE GO TO ERROR
024330  122767  000270  154270  TTR1A:CMPB    #270,TIB        ;SEE IF CHAR IS GREATER THAN 7
024336  101002                        BHI     TTR1B           ;IF NOT: BR
024340  000167  000062                JMP     TINER           ;ELSE GO TO ERROR
024344  005267  154334        TTR1B:  INC     TEMP1           ;SET FIRST CHARACTER FLAG
024350  000241                        CLC
024352  006100                        ROL     R0
024354  000241                        CLC
024356  006100                        ROL     R0              ;SHIFT 3 LEFT
024360  000241                        CLC
024362  006100                        ROL     R0
024364  042767  177770  154234        BIC     #177770,TIB     ;STRIP ASCII
024372  056700  154230                BIS     TIB,R0          ;LOAD CHARACTER
024376  005301                        DEC     R1              ;SEE IF DONE
024400  001332                        BNE     TTR0            ;IF NOT: BR
024402  020002                TTR2:   CMP     R0,R2           ;SEE IF EXCEEDED MAXIMUM LIMIT
024404  101402                        BLOS    TTR3            ;IF NOT: BR
024406  000167  000014                JMP     TINER           ;ELSE GO TO ERROR
024412  020300                TTR3:   CMP     R3,R0           ;SEE IF BELOW MINIMUM LIMIT
024414  101402                        BLOS    TTR4            ;IF NOT: BR
024416  000167  000004                JMP     TINER           ;ELSE GO TO ERROR
024422  010015                TTR4:   MOV     R0,(R5)         ;LOAD VALUE
024424  000207                TTR5:   RTS     PC              ;EXIT
```

```
                                        ;TTY ENTRY ERROR SUBROUTINE**********
                                
024426  012704  027544          TINER:  MOV     #MSG40,R4
024432  004767  000060                  JSR     PC,TTOUT        ;PRINT?
024436  162716  000020                  SUB     #20,(SP)        ;RESET SP TO START OF VALUE ROUTINE
024442  000207                          RTS     PC              ;REDO VALUE ENTRY
                                
                                        ;TTY READ SUBROUTINE**********
                                
024444  005077  154124          TTIN:   CLR     @TKS
024450  005077  154122                  CLR     @TKB
024454  005067  154146                  CLR     TIB
024460  005277  154110                  INC     @TKS
024464  105777  154104          TTIN1:  TSTB    @TKS
024470  100375                          BPL     TTIN1
024472  017767  154100  154126        MOV     @TKB,TIB
024500  105777  154074          TTIN2:  TSTB    @TPS
024504  100375                          BPL     TTIN2
024506  116777  154114  154066        MOVB    TIB,@TPB
024514  000207                          RTS     PC
                                
                                        ;TTY OUTPUT SUBROUTINE**********
                                
024516  112467  154102          TTOUT:  MOVB    (R4)+,TOB
024522  122767  000043  154074        CMPB    #43,TOB
024530  001446                          BEQ     TEX
024532  122767  000045  154064        CMPB    #45,TOB
024540  001403                          BEQ     TCRLF
024542  004767  000064                  JSR     PC,TOG
024546  000763                          BR      TTOUT
024550  112767  000015  154046  TCRLF:  MOVB    #15,TOB
024556  004767  000050                  JSR     PC,TOG
024562  012703  000004                  MOV     #4,R3
024566  005067  154032          TCRLFA: CLR     TOB
024572  004767  000034                  JSR     PC,TOG
024576  005303                          DEC     R3
024600  001372                          BNE     TCRLFA          ;DO FILLERS
024602  112767  000012  154014        MOVB    #12,TOB
024610  004767  000016                  JSR     PC,TOG
024614  105767  000272                  TSTB    RDSW
024620  100401                          BMI     1$
024622  000735                          BR      TTOUT
024624  005067  000262          1$:     CLR     RDSW
024630  000406                          BR      TEX
024632  105777  153742          TOG:    TSTB    @TPS
024636  100375                          BPL     TOG
024640  116777  153760  153734        MOVB    TOB,@TPB
024646  000207                  TEX:    RTS     PC
                                
                                        ;OCTAL OUTPUT SUBROUTINE**********
                                
024650  012767  000001  000226  OCTPE:  MOV     #1,OFL
024656  000402                          BR      OCTPE1
024660  005067  000220          OCTP:   CLR     OFL             ;CLEAR FLAG FOR LEADING ZERO
```

```
4840  024664  010304                OCTPE1: MOV     R3,R4           ;SEE IF NUMBER IS ZERO
4841  024666  001007                        BNE     OCTP0           ;IF NOT ZERO: BR
4842  024670  005767  000210                TST     OFL             ;SEE IF PRINT ALL 0
4843  024674  001004                        BNE     OCTP0           ;IF SO: BR
4844  024676  004767  000162                JSR     PC,OCTPG1       ;ELSE PRINT ZERO
4845  024702  000167  000120                JMP     OCTP3           ;SPACE AND EXIT
4846  024706  032704  100000        OCTP0:  BIT     #100000,R4      ;SEE IF MSD = 1
4847  024712  001406                        BEQ     OCTP1           ;IF NOT: BR
4848  024714  012704  000001                MOV     #1,R4
4849  024720  004767  000116                JSR     PC,OCTPG        ;PRINT 1
4850  024724  000167  000006                JMP     OCTP2
4851  024730  005004                OCTP1:  CLR     R4
4852  024732  004767  000104                JSR     PC,OCTPG        ;PRINT 0
4853  024736  010304                OCTP2:  MOV     R3,R4
4854  024740  006004                        ROR     R4
4855  024742  006004                        ROR     R4
4856  024744  006004                        ROR     R4              ;POSITION DIGIT
4857  024746  006004                        ROR     R4
4858  024750  000304                        SWAB    R4
4859  024752  004767  000064                JSR     PC,OCTPG        ;PRINT DIGIT 2
4860  024756  010304                        MOV     R3,R4
4861  024760  006004                        ROR     R4
4862  024762  000304                        SWAB    R4
4863  024764  004767  000052                JSR     PC.OCTPG        ;PRINT DIGIT 3
4864  024770  010304                        MOV     R3,P4
4865  024772  006104                        ROL     R4
4866  024774  006104                        ROL     R4
4867  024776  000304                        SWAB    R4
4868  025000  004767  000036                JSR     PC,OCTPG        ;PRINT DIGIT 4
4869  025004  010304                        MOV     R3,R4
4870  025006  006004                        ROR     R4
4871  025010  006004                        ROR     R4
4872  025012  006004                        ROR     R4
4873  025014  004767  000022                JSR     PC,OCTPG
4874  025020  010304                        MOV     R3,R4
4875  025022  004767  000014                JSR     PC,OCTPG        ;PRINT DIGIT 5
4876  025026  012767  000240  153570 OCTP3: MOV     #240,TOB
4877  025034  004767  177572                JSR     PC,TOG          ;PRINT SPACE
4878  025040  000207                        RTS     PC              ;EXIT
4879  025042  042704  177770        OCTPG:  BIC     #177770,R4
4880  025046  001004                        BNE     OCTPGO
4881  025050  005767  000030                TST     OFL
4882  025054  001001                        BNE     OCTPGO
4883  025056  000207                        RTS     PC
4884  025060  005267  000020        OCTPGO: INC     OFL
4885  025064  052704  000260        OCTPG1: BIS     #260,R4
4886  025070  010467  153530                MOV     R4,TOB
4887  025074  004767  177532                JSR     PC,TOG
4888  025100  010304                        MOV     R3,R4
4889  025102  000207                        RTS     PC
4890  025104  000000                OFL:    0                       ;FIRST CHAR FLAG
4891
4892
4893                                        ;CHECK SWITCH REGISTER ROUTINE. CHECKS FOR  G TO ALLOW CHANGING
4894                                        ;OF LOC.176.
4895                                        ;CALL IS BY WAY OF JSR  PC,CKSWR
```

```
4896                                            ;LOCATIONS USED:
4897  025106  000000                            TEMPST: .WORD   0
4898  025110  000000                            COUNT:  .WORD   0
4899  025112  000000                            RDSW:   .WORD   0
4900  025114  022767  000176  153450  CKSWR:    CMP     #SWREG,SWR              ;SOFTWARE SWITCH REG PRESENT
4901  025122  001037                            BNE     OUT                     ;NO, GET OUT
4902  025124  105777  153444                    TSTB    @TKS                    ;YES,WAIT FOR
4903  025130  100034                            BPL     OUT                     ;READY, GET CHARACTER
4904  025132  017767  153440  153466            MOV     @TKB,TIB                ;AND STRIP OFF
4905  025140  042767  177600  153460            BIC     #177600,TIB             ;THE GARBAGE
4906  025146  022767  000007  153452            CMP     #7,TIB          ;IS IT A <G>
4907  025154  001022                            BNE     OUT
4908  025156  012704  036101                    MOV     #$CNTG,R4
4909  025162  004767  177330                    JSR     PC,TTOUT
4910  025166  012704  036105          CNTLU:    MOV     #$MSWR,R4
4911  025172  004767  177320                    JSR     PC,TTOUT
4912  025176  017703  153370                    MOV     @SWR,R3
4913  025202  004767  177442                    JSR     PC,OCTPE
4914  025206  012704  036114                    MOV     #$MNEW,R4
4915  025212  004767  177300                    JSR     PC,TTOUT
4916  025216  004767  000002                    JSR     PC,$READ                ;GO READ A LINE
4917  025222  000207                  OUT:      RTS     PC                      ;RETURN TO MAIN BODY OF PROGRAM
4918
4919  025224  005067  177656            $READ:  CLR     TEMPST
4920  025230  012767  000007  177652            MOV     #7,COUNT
4921  025236  004767  177202            1$:     JSR     PC,TTIN         ;GO  READ A CHARACTER
4922  025242  042767  177600  153356            BIC     #177600,TIB     ;STRIP OFF GARBAGE
4923  025250  122767  000025  153350            CMPB    #25,TIB         ;IS IT A  U?
4924  025256  001002                            BNE     2$              ;BRANCH IF NOT
4925  025260  005726                    3$:     TST     (SP)+           ;POP THE STACK
4926  025262  000741                            BR CNTLU                ;START OVER
4927  025264  122767  000015  153334    2$:     CMPB    #15,TIB         ;IS IT A <CR>?
4928  025272  001013                            BNE     4$              ;BRANCH IF NOT
4929  025274  012767  000200  177610            MOV     #200,RDSW
4930  025302  004767  177242                    JSR     PC,TCRLF        ;ECHO IT WITH <LF>
4931  025306  022767  000007  177574            CMP     #7,COUNT        ;WAS IT FIRST CHARACTER
4932  025314  001037                            BNE     7$              ;CHANGE SWR IF NOT FIRST ONE
4933  025316  005726                    8$:     TST     (SP)+           ;POP THE STACK
4934  025320  000740                            BR      OUT             ;GET OUT
4935  025322  122767  000060  153276    4$:     CMPB    #60,TIB
4936  025330  003004                            BGT     5$
4937  025332  122767  000067  153266            CMPB    #67,TIB
4938  025340  002005                            BGE     6$
4939  025342  012704  036124            5$:     MOV     #$QUEST,R4
4940  025346  004767  177144                    JSR     PC,TTOUT
4941  025352  000742                            BR      3$              ;START OVER IF NOT LEGAL CHARACTER
4942  025354  006367  177526            6$:     ASL     TEMPST
4943  025360  006367  177522                    ASL     TEMPST
4944  025364  006367  177516                    ASL     TEMPST
4945  025370  142767  000060  153230            BICB    #60,TIB         ;GET NITTY-GRITTY
4946  025376  156767  153224  177502            BISB    TIB,TEMPST
4947  025404  005367  177500                    DEC     COUNT           ;ONLY WANT 6   DIGITS
4948  025410  001754                            BEQ     5$
4949  025412  000711                            BR      1$
4950  025414  016777  177466  153150    7$:     MOV     TEMPST,@SWR     ;CHANGE SWITCH REGISTER CONTENTS
4951  025422  000735                            BR      8$
```

```
4952
4953                                        ;DATA CHARACTER OUTPUT SUBROUTINE**********
4954
4955  025424  005067  153174          DOUT: CLR     TOB
4956  025430  012704  000010                MOV     #10,R4          ;SET NUMBER TO PRINT
4957  025434  110367  153164                MOVB    R3,TOB
4958  025440  105777  153134          DOUT1: TSTB    @TPS
4959  025444  100375                       BPL     DOUT1
4960  025446  132767  000200  153150       BITB    #200,TOB
4961  025454  001404                       BEQ     DOUT2
4962  025456  012777  000061  153116       MOV     #061,@TPB
4963  025464  000403                       BR      DOUT3
4964  025466  012777  000060  153106 DOUT2: MOV     #060,@TPB
4965  025474  006167  153124       DOUT3: ROL     TOB
4966  025500  005304                       DEC     R4
4967  025502  001356                       BNE     DOUT1
4968  025504  000207                       RTS     PC
4969  025506  016703  153176       DOUTD: MOV     TEMP3,R3
4970  025512  000303                       SWAB    R3
4971  025514  004767  177704               JSR     PC,DOUT
4972  025520  016703  153164               MOV     TEMP3,R3
4973  025524  004767  177674               JSR     PC,DOUT
4974  025530  000207                       RTS     PC
4975
4976                                        ;TU16 SERIAL NUMBER PRINT SUBROUTINE**********
4977
4978  025532  010304          SNPT: MOV     R3,R4
4979  025534  000304                SWAB    R4
4980  025536  006004                ROR     R4
4981  025540  006004                ROR     R4
4982  025542  006004                ROR     R4
4983  025544  006004                ROR     R4              ;GET FIRST DIGIT
4984  025546  004767  000036        JSR     PC,SNPG         ;PRINT
4985  025552  010304                MOV     R3,R4
4986  025554  000304                SWAB    R4              ;GET SECOND DIGIT
4987  025556  004767  000026        JSR     PC,SNPG         ;PRINT
4988  025562  010304                MOV     R3,R4
4989  025564  006004                ROR     R4
4990  025566  006004                ROR     R4
4991  025570  006004                ROR     R4
4992  025572  006004                ROR     R4
4993  025574  004767  000010        JSR     PC,SNPG         ;PRINT THIRD DIGIT
4994  025600  010304                MOV     R3,R4
4995  025602  004767  000002        JSR     PC,SNPG         ;PRINT FOURTH DIGIT
4996  025606  000207                RTS     PC              ;EXIT
4997  025610  012767  000260  153006 SNPG: MOV     #260,TOB        ;SET BASE = 0
4998  025616  042704  177760        BIC     #177760,R4      ;MASK DIGIT
4999  025622  050467  152776        BIS     R4,TOB          ;SET ASCII
5000  025626  004767  177000        JSR     PC,TOG          ;TYPE DIGIT
5001  025632  000207                RTS     PC              ;RETURN
5002
5003                                        ;HALT HANDLEN**********
5004
5005  025634  000000          STOP: HALT
5006  025636  004767  177252        JSR     PC,CKSWR        ;CHECK FOR CONTROL G
5007  025642  000207                RTS     PC
```

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                                                                    ! 11
  5008
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5009
5010                                    ;       ********************************************************************
5011                                    ;               CHECK FOR DUMP MODE OR AUTOMATIC MODE
5012                                    ;       ********************************************************************
5013
5014  025644  005067  152746           CKMODE: CLR     AUTOM                   ;INIT AUTO MODE
5015  025650  005737  000042                   TST     @#42                    ;AUTOMATIC MODE?
5016  025654  001417                           BEQ     2$                      ;BRANCH - IF NOT
5017  025656  005267  152734                   INC     AUTOM                   ;SET AUTO MODE INDICATOR
5018  025662  023737  000042  000046           CMP     @#42,@#46               ;ACT11 MODE?
5019  025670  001403                           BEQ     1$                      ;BRANCH - IF YES
5020  025672  105267  152723                   INCB    XXDPM                   ;INDICATE  XXDP AUTO MODE
5021  025676  000416                           BR      5$                      ;AND EXIT
5022  025700  105267  152714           1$:     INCB    ACT11M                  ;INDICATE ACT11 AUTO MODE
5023  025704  052777  104000  152660           BIS     #104000,@SWR            ;SET FOR CON: CYCLE & HALT ON ERROR
5024  025712  000410                           BR      5$              ;AND EXIT
5025  025714  105737  000041           2$:     TSTB    @#41                    ;MAN: MODE VIA ACT11/PAPER TAPE?
5026  025720  001003                           BNE     3$                      ;BRANCH IF NOT
5027  025722  105267  152674                   INCB    ADUMPM                  ;INDICATE MAN:  MODE VIA ACT11/PPAPER TAPE
5028  025726  000402                           BR      5$                      ;AND EXIT THRU M.I
5029  025730  105267  152667           3$:     INCB    XDUMPM                  ;INDICATE MANUAL MODE VIA XXDP
5030  025734  000207                   5$:     RTS     PC                      ;RETURN
5031
5032                                    ;       ********************************************************************
5033
```

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5034
5035                            ;       **********************************************************************
5036                            ;               DISCONTINUE TESTING FOR
5037                            ;               ILLEGAL CONDITIONS
5038                            ;       **********************************************************************
5039
5040   025736                   ABORT:
5041   025736  000005                  RESET                           ;INITIALIZE THE WORLD
5042   025740  012704  026020          MOV     #MSGD,R4                ;GET ABORT MESSAGE
5043   025744  004767  176546          JSR     PC,TTOUT                ;TYPE ABORT MESSAGE
5044   025750  105767  152645          TSTB    XXDPM                   ;XXDP AUTO MODE
5045   025754  001405                  BEQ     1$                      ;BRANCH - IF NOT
5046   025756  013700  000042          MOV     @#42,R0                 ;GET MONITOR EXIT ADDRESS
5047   025762  005037  000042          CLR     @#42                    ;USE AS ABORT FLAG
5048   025766  004710                  JSR     PC,(R0)                 ;EXIT TO XXDP MONITOR
5049   025770  000777          1$:     BR      .                       ;AND HANG
5050
5051                            ;       **********************************************************************
5052
```

```
                                        ;MESSAGE TABLE**********
                                ;       **********************************************************************
025772  050045  047522  051107  MSGC:   .ASCII  /%PROGRAM IS DISABLED%#/
026000  046501  044440  020123
026006  044504  040523  046102
026014  042105  021445
026020  050045  047522  051107  MSGD:   .ASCII  /%PROGRAM IS ABORTED%#/
026026  046501  044440  020123
026034  041101  051117  042524
026042  022504     043
026045     045  051105  047522  MSGE:   .ASCII  /%ERROR:        DRIVE NOT TE16 NOR TU16%#/
026052  035122  042011  044522
026060  042526  047040  052117
026066  052040  030505  020066
026074  047516  020122  052524
026102  033061  021445
                                ;       **********************************************************************
026106  022445  046524  031060  MSG1:   .ASCII  /%%TM02 - TU16 CTRL LGC (CZTUCF0)#/
026114  026440  052040  030525
026122  020066  052103  046122
026130  046040  041507  024040
026136  055103  052524  043103
026144  024460     043
026147     105  052116  051105          .ASCII  /ENTER CONDITIONS IN OCTAL%#/
026154  041440  047117  044504
026162  044524  047117  020123
026170  047111  047440  052103
026176  046101  021445
026202  042045  044522  042526  MSG2:   .ASCII  /%DRIVE NUMBER #/
026210  047040  046525  042502
026216  020122     043
026221     045  043045  051117  MSG2A:  .ASCII  /%%FOR DRIVE ADDRESS TEST:/
026226  042040  044522  042526
026234  040440  042104  042522
026242  051523  052040  051505
026250  035524
026252  020045  047105  042524          .ASCII  /% ENTER EXPT DRIVE NUMBER, ALL OTHERS SHOULD BE NON-EXISTANT.#/
026260  020122  054105  052120
026266  042040  044522  042526
026274  047040  046525  042502
026302  026122  040440  046114
026310  047440  044124  051105
026316  020123  044123  052517
026324  042114  041040  020105
026332  047516  026516  054105
026340  051511  040524  052116
026346  021456
026350  047045  047117  042455  MSG3:   .ASCII  /%NON-EXIST DRIVE #/
026356  044530  052123  042040
026364  044522  042526  021440
026372  051045  020110  042504  MSG4:   .ASCII  /%RH DETECTED #/
026400  042524  052103  042105
026406  021440
026410  052045  030115  020062  MSG5:   .ASCII  /%TM02 DETECTED #/
```

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 5109  026416  042504  042524  052103
 5110  026424  042105  021440
 5111  026430  054105  052120  047055  MSG6:   .ASCII  /EXPT-NOT RECVD#/
 5112  026436  052117  051040  041505
 5113  026444  042126     043
 5114  026447     122  053103  026504  MSG7:   .ASCII  /RCVD-NOT EXPT#/
 5115  026454  047516  020124  054105
 5116  026462  052120     043
 5117  026465     045  046123  053101  MSG8:   .ASCII  /%SLAVE NUMBER #/
 5118  026472  020105  052516  041115
 5119  026500  051105  021440
 5120  026504  022445  047506  020122  MSG8A:  .ASCII  /%%FOR SLAVE ADDRESS TEST:/
 5121  026512  046123  053101  020105
 5122  026520  042101  051104  051505
 5123  026526  020123  042524  052123
 5124  026534     073
 5125  026535     045  042440  052116          .ASCII  /% ENTER EXPT SLAVE NUMBER, ALL OTHERS SHOULD BE NON-EXISTANT.#/
 5126  026542  051105  042440  050130
 5127  026550  020124  046123  053101
 5128  026556  020105  052516  041115
 5129  026564  051105  020054  046101
 5130  026572  020114  052117  042510
 5131  026600  051522  051440  047510
 5132  026606  046125  020104  042502
 5133  026614  047040  047117  042455
 5134  026622  044530  052123  047101
 5135  026630  027124     043
 5136  026633     045  047516  026516  MSG9:   .ASCII  /%NON-EXIST SLAVE #/
 5137  026640  054105  051511  020124
 5138  026646  046123  053101  020105
 5139  026654     043
 5140  026655     045  042522  042101  MSG10:  .ASCII  /%READ CONT BUS PAR #/
 5141  026662  041440  047117  020124
 5142  026670  052502  020123  040520
 5143  026676  020122     043
 5144  026701     045  051127  052111  MSG11:  .ASCII  /%WRITE CONT BUS PAR #/
 5145  026706  020105  047503  052116
 5146  026714  041040  051525  050040
 5147  026722  051101  021440
 5148  026726  042440  050130  020124  MSG12:  .ASCII  / EXPT #/
 5149  026734     043
 5150  026735     040  041522  042126  MSG13:  .ASCII  / RCVD #/
 5151  026742  021440
 5152  026744  046445  020122  044502  MSG14:  .ASCII  /%MR BITS 4-0#/
 5153  026752  051524  032040  030055
 5154  026760     043
 5155  026761     045  051115  041040  MSG15:  .ASCII  /%MR BITS 15-7#/
 5156  026766  052111  020123  032461
 5157  026774  033455     043
 5158  026777     045  052111  051105  MSG16:  .ASCII  /%ITER: #/
 5159  027004  020072     043
 5160  027007     045  041524  041040  MSG17:  .ASCII  /%TC BIT 13 #/
 5161  027014  052111  030440  020063
 5162  027022     043
 5163  027023     045  041524  041040  MSG18:  .ASCII  /%TC BITS 12-0 #/
 5164  027030  052111  020123  031061
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 5165  027036  030055  021440
 5166  027042  043045  020103  044502  MSG19:  .ASCII  /%FC BITS 15-0 #/
 5167  027050  051524  030440  026465
 5168  027056  020060     043
 5169  027061     045  052506  020116  MSG20:  .ASCII  /%FUN CODE BITS 5-1 OF C1 #/
 5170  027066  047503  042504  041040
 5171  027074  052111  020123  026465
 5172  027102  020061  043117  041440
 5173  027110  020061     043
 5174  027113     045  047507  041040  MSG21:  .ASCII  /%GO BIT NOT CORRECT AT START #/
 5175  027120  052111  047040  052117
 5176  027126  041440  051117  042522
 5177  027134  052103  040440  020124
 5178  027142  052123  051101  020124
 5179  027150     043
 5180  027151     045  047507  041040  MSG22:  .ASCII  /%GO BIT NOT SET #/
 5181  027156  052111  047040  052117
 5182  027164  051440  052105  021440
 5183  027172  043445  020117  044502  MSG23:  .ASCII  /%GO BIT NOT RESET BY INIT #/
 5184  027200  020124  047516  020124
 5185  027206  042522  042523  020124
 5186  027214  054502  044440  044516
 5187  027222  020124     043
 5188  027225     045  051104  020131  MSG24:  .ASCII  /%DRY NOT SET BY INIT #/
 5189  027232  047516  020124  042523
 5190  027240  020124  054502  044440
 5191  027246  044516  020124     043
 5192  027253     045  051104  020131  MSG25:  .ASCII  /%DRY NOT RESET BY GO=1#/
 5193  027260  047510  020124  042522
 5194  027266  042523  020124  054502
 5195  027274  043440  036517  021461
 5196  027302  042045  054522  047040  MSG25A: .ASCII  /%DRY NOT SET BY GO=0#/
 5197  027310  052117  051440  052105
 5198  027316  041040  020131  047507
 5199  027324  030075     043
 5200  027327     045  047516  044440  MSG26:  .ASCII  /%NO INTERRUPT RETURNED#/
 5201  027334  052116  051105  052522
 5202  027342  052120  051040  052105
 5203  027350  051125  042516  021504
 5204  027356  041045  042101  051440  MSG27:  .ASCII  /%BAD STATUS#/
 5205  027364  040524  052524  021523
 5206  027372  051440  035116  021440  MSG30:  .ASCII  / SN: #/
 5207  027400  042445  051122  047040  MSG31:  .ASCII  /%ERR NOT SET #/
 5208  027406  052117  051440  052105
 5209  027414  021440
 5210  027416  040445  040524  047040  MSG32:  .ASCII  /%ATA NOT SET #/
 5211  027424  052117  051440  052105
 5212  027432  021440
 5213  027434  040445  020123  044502  MSG33:  .ASCII  /%AS BIT NOT SET #/
 5214  027442  020124  047516  020124
 5215  027450  042523  020124     043
 5216  027455     045  041523  047040  MSG34:  .ASCII  /%SC NOT SET #/
 5217  027462  052117  051440  052105
 5218  027470  021440
 5219  027472  052045  042522  047040  MSG35:  .ASCII  /%TRE NOT SET #/
 5220  027500  052117  051440  052105
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 5221  027506  021440
 5222  027510  051445  040514  047040  MSG36:  .ASCII  /%SLA NOT SET #/
 5223  027516  052117  051440  052105
 5224  027524  021440
 5225  027526  051445  041523  047040  MSG37:  .ASCII  /%SSC NOT SET #/
 5226  027534  052117  051440  052105
 5227  027542  021440
 5228  027544  037440  021440          MSG40:  .ASCII  / ? #/
 5229  027550  022445  047105  020104  MSG41:  .ASCII  /%%END OF PASS #/
 5230  027556  043117  050040  051501
 5231  027564  020123     043
 5232  027567     045  042504  042101  MSG42:  .ASCII  /%DEAD TRACK #/
 5233  027574  052040  040522  045503
 5234  027602  021440
 5235  027604  022445  040515  052516  MSG43:  .ASCII  /%%MANUAL TESTS (14-17) INHIBITED: HALT%/
 5236  027612  046101  052040  051505
 5237  027620  051524  024040  032061
 5238  027626  030455  024467  044440
 5239  027634  044116  041111  052111
 5240  027642  042105  020072  040510
 5241  027650  052114     045
 5242  027653     122  051505  046105          .ASCII  /RESELECT AND PRESS CONTINUE%#/
 5243  027660  041505  020124  047101
 5244  027666  020104  051120  051505
 5245  027674  020123  047503  052116
 5246  027702  047111  042525  021445
 5247  027710  051045  043505  051511  MSG44:  .ASCII  /%REGISTER START: #/
 5248  027716  042524  020122  052123
 5249  027724  051101  035124  021440
 5250  027732  053045  041505  047524  MSG45:  .ASCII  /%VECTOR ADDRESS: #/
 5251  027740  020122  042101  051104
 5252  027746  051505  035123  021440
 5253  027754  041445  030523  020040  MSG46:  .ASCII  /%CS1    WC     BA     FC     CS2    DS     ER     AS/
 5254  027762  020040  041527  020040
 5255  027770  020040  041040  020101
 5256  027776  020040  020040  041506
 5257  030004  020040  020040  041440
 5258  030012  031123  020040  020040
 5259  030020  051504  020040  020040
 5260  030026  042440  020122  020040
 5261  030034  020040  051501
 5262  030040  020040  020040  046440          .ASCII  /     MR     TC%#/
 5263  030046  020122  020040  020040
 5264  030054  041524  021445
 5265  030060  047045  052117  051040  MSG47:  .ASCII  /%NOT RESET BY DRIVE CLEAR#/
 5266  030066  051505  052105  041040
 5267  030074  020131  051104  053111
 5268  030102  020105  046103  040505
 5269  030110  021522
 5270  030112  040445  050114  040510  MSG50:  .ASCII  /%ALPHA NOT SET#/
 5271  030120  047040  052117  051440
 5272  030126  052105     043
 5273  030131     045  047125  054105  MSG51:  .ASCII  /%UNEXPECTED ERROR BITS#/
 5274  030136  042520  052103  042105
 5275  030144  042440  051122  051117
 5276  030152  041040  052111  021523
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 5277  030160  047045  055122  047440  MSG52:  .ASCII  /%NRZ ONLY: #/
 5278  030166  046116  035131  021440
 5279  030174  041045  042101  046040  MSG53:  .ASCII  /%BAD LRC #/
 5280  030202  041522  021440
 5281  030206  041045  042101  041440  MSG54:  .ASCII  /%BAD CK #/
 5282  030214  020113     043
 5283  030217     045  042523  052524  MSG55:  .ASCII  /%SETUP ERROR: CHECK WRAP 0 WITH TEST 50#/
 5284  030224  020120  051105  047522
 5285  030232  035122  041440  042510
 5286  030240  045503  053440  040522
 5287  030246  020120  020060  044527
 5288  030254  044124  052040  051505
 5289  030262  020124  030065     043
 5290  030267     045  052123  052101  MSG56:  .ASCII  /%STATIC TESTS ONLY: #/
 5291  030274  041511  052040  051505
 5292  030302  051524  047440  046116
 5293  030310  035131  021440
```

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                                        ;TEST HEADER**********
                                        
030314  022445  047514  044507  MSLT1:  .ASCII  /%%LOGIC TEST 1: DRIVE ADDRESSING (M8909 RH)#/
030322  020103  042524  052123
030330  030440  020072  051104
030336  053111  020105  042101
030344  051104  051505  044523
030352  043516  024040  034115
030360  030071  020071  044122
030366  021451
030370  022445  047514  044507  MSLT2:  .ASCII  /%%LOGIC TEST 2: REGISTER ADDRESSING (M8909 RH)#/
030376  020103  042524  052123
030404  031040  020072  042522
030412  044507  052123  051105
030420  040440  042104  042522
030426  051523  047111  020107
030434  046450  034470  034460
030442  051040  024510     043
030447     045  046045  043517  MSLT3:  .ASCII  /%%LOGIC TEST 3: CONTROL BUS TEST (RH M8905 M8909)#/
030454  041511  052040  051505
030462  020124  035063  041440
030470  047117  051124  046117
030476  041040  051525  052040
030504  051505  020124  051050
030512  020110  034115  030071
030520  020065  034115  030071
030526  024471     043
030531     045  046045  043517  MSLT4:  .ASCII  /%%LOGIC TEST 4: SLAVE ADDRESSING (M8905 M8903)#/
030536  041511  052040  051505
030544  020124  035064  051440
030552  040514  042526  040440
030560  042104  042522  051523
030566  047111  020107  046450
030574  034470  032460  046440
030602  034470  031460  021451
030610  022445  047514  044507  MSLT5:  .ASCII  /%%LOGIC TEST 5: MR BIT TEST (M8905)#/
030616  020103  042524  052123
030624  032440  020072  051115
030632  041040  052111  052040
030640  051505  020124  046450
030646  034470  032460  021451
030654  022445  047514  044507  MSLT6:  .ASCII  /%%LOGIC TEST 6: TC BIT TEST (M8905)#/
030662  020103  042524  052123
030670  033040  020072  041524
030676  041040  052111  052040
030704  051505  020124  046450
030712  034470  032460  021451
030720  022445  047514  044507  MSLT7:  .ASCII  /%%LOGIC TEST 7: FC BIT TEST (M8905)#/
030726  020103  042524  052123
030734  033440  020072  041506
030742  041040  052111  052040
030750  051505  020124  046450
030756  034470  032460  021451
030764  022445  047514  044507  MSLT10: .ASCII  /%%LOGIC TEST 10: FUNCTION BIT TEST (M8905)#/
030772  020103  042524  052123
031000  030440  035060  043040
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 5350  031006  047125  052103  047511
 5351  031014  020116  044502  020124
 5352  031022  042524  052123  024040
 5353  031030  034115  030071  024465
 5354  031036     043
 5355  031037     045  046045  043517  MSLT11:  .ASCII  /%%LOGIC TEST 11:  GO BIT TEST (M8909)#/
 5356  031044  041511  052040  051505
 5357  031052  020124  030461  020072
 5358  031060  047507  041040  052111
 5359  031066  052040  051505  020124
 5360  031074  046450  034470  034460
 5361  031102  021451
 5362  031104  022445  047514  044507  MSLT12:  .ASCII  /%%LOGIC TEST 12:  DRIVE READY BIT (M8909)#/
 5363  031112  020103  042524  052123
 5364  031120  030440  035062  042040
 5365  031126  044522  042526  051040
 5366  031134  040505  054504  041040
 5367  031142  052111  024040  034115
 5368  031150  030071  024471     043
 5369  031155     045  046045  043517  MSLT13:  .ASCII  /%%LOGIC TEST 13:  INTERRUPT TEST (RH)#/
 5370  031162  041511  052040  051505
 5371  031170  020124  031461  020072
 5372  031176  047111  042524  051122
 5373  031204  050125  020124  042524
 5374  031212  052123  024040  044122
 5375  031220  021451
 5376  031222  022445  047514  044507  MSLT14:  .ASCII  /%%LOGIC TEST 14:  MANUAL STATUS TEST 1#/
 5377  031230  020103  042524  052123
 5378  031236  030440  035064  046440
 5379  031244  047101  040525  020114
 5380  031252  052123  052101  051525
 5381  031260  052040  051505  020124
 5382  031266  021461
 5383  031270  022445  047514  044507  MSLT15:  .ASCII  /%%LOGIC TEST 15:  MANUAL STATUS TEST 2#/
 5384  031276  020103  042524  052123
 5385  031304  030440  035065  046440
 5386  031312  047101  040525  020114
 5387  031320  052123  052101  051525
 5388  031326  052040  051505  020124
 5389  031334  021462
 5390  031336  022445  047514  044507  MSLT16:  .ASCII  /%%LOGIC TEST 16:  MANUAL STATUS TEST 3#/
 5391  031344  020103  042524  052123
 5392  031352  030440  035066  046440
 5393  031360  047101  040525  020114
 5394  031366  052123  052101  051525
 5395  031374  052040  051505  020124
 5396  031402  021463
 5397  031404  022445  047514  044507  MSLT17:  .ASCII  /%%LOGIC TEST 17:  MANUAL STATUS TEST 4#/
 5398  031412  020103  042524  052123
 5399  031420  030440  035067  046440
 5400  031426  047101  040525  020114
 5401  031434  052123  052101  051525
 5402  031442  052040  051505  020124
 5403  031450  021464
 5404  031452  022445  047514  044507  MSLT20:  .ASCII  /%%LOGIC TEST 20:  ILLEGAL FUNCTION TEST (M8909)#/
 5405  031460  020103  042524  052123
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 5406  031466  031040  035060  044440
 5407  031474  046114  043505  046101
 5408  031502  043040  047125  052103
 5409  031510  047511  020116  042524
 5410  031516  052123  024040  034115
 5411  031524  030071  024471     043
 5412  031531     045  046045  043517  MSLT21: .ASCII  /%%LOGIC TEST 21: RMR(M8909)#/
 5413  031536  041511  052040  051505
 5414  031544  020124  030462  020072
 5415  031552  046522  024122  034115
 5416  031560  030071  024471     043
 5417  031565     045  046045  043517  MSLT22: .ASCII  /%%LOGIC TEST 22: CPAR(M8909)#/
 5418  031572  041511  052040  051505
 5419  031600  020124  031062  020072
 5420  031606  050103  051101  046450
 5421  031614  034470  034460  021451
 5422  031622  022445  047514  044507  MSLT23: .ASCII  /%%LOGIC TEST 23: FMT(M8905 M8906)#/
 5423  031630  020103  042524  052123
 5424  031636  031040  035063  043040
 5425  031644  052115  046450  034470
 5426  031652  032460  046440  034470
 5427  031660  033060  021451
 5428  031664  022445  047514  044507  MSLT24: .ASCII  /%%LOGIC TEST 24: DPAR(M8906 RH)#/
 5429  031672  020103  042524  052123
 5430  031700  031040  035064  042040
 5431  031706  040520  024122  034115
 5432  031714  030071  020066  044122
 5433  031722  021451
 5434  031724  022445  047514  044507  MSLT25: .ASCII  /%%LOGIC TEST 25: NEF(M8909)#/
 5435  031732  020103  042524  052123
 5436  031740  031040  035065  047040
 5437  031746  043105  046450  034470
 5438  031754  034460  021451
 5439  031760  022445  047514  044507  MSLT26: .ASCII  /%%LOGIC TEST 26: FCE(M8909)#/
 5440  031766  020103  042524  052123
 5441  031774  031040  035066  043040
 5442  032002  042503  046450  034470
 5443  032010  034460  021451
 5444  032014  022445  047514  044507  MSLT27: .ASCII  /%%LOGIC TEST 27: ILR(M8909)#/
 5445  032022  020103  042524  052123
 5446  032030  031040  035067  044440
 5447  032036  051114  046450  034470
 5448  032044  034460  021451
 5449  032050  022445  047514  044507  MSLT30: .ASCII  /%%LOGIC TEST 30: DTE(M8906 RH)#/
 5450  032056  020103  042524  052123
 5451  032064  031440  035060  052104
 5452  032072  024105  034115  030071
 5453  032100  020066  044122  021451
 5454  032106  022445  047514  044507  MSLT31: .ASCII  /%%LOGIC TEST 31: OPI(M8903)#/
 5455  032114  020103  042524  052123
 5456  032122  031440  035061  047440
 5457  032130  044520  046450  034470
 5458  032136  031460  021451
 5459  032142  022445  047514  044507  MSLT32: .ASCII  /%%LOGIC TEST 32: UNS(M8909)#/
 5460  032150  020103  042524  052123
 5461  032156  031440  035062  052440
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 5462  032164  051516  046450  034470
 5463  032172  034460  021451
 5464  032176  022445  047514  044507  MSLT33:  .ASCII  /%%LOGIC TEST 33:  PIP(M8909)#/
 5465  032204  020103  042524  052123
 5466  032212  031440  035063  050040
 5467  032220  050111  046450  034470
 5468  032226  034460  021451
 5469  032232  022445  047514  044507  MSLT34:  .ASCII  /%%LOGIC TEST 34:  PES(M8911)#/
 5470  032240  020103  042524  052123
 5471  032246  031440  035064  050040
 5472  032254  051505  046450  034470
 5473  032262  030461  021451
 5474  032266  022445  047514  044507  MSLT35:  .ASCII  /%%LOGIC TEST 35:  TCW(M8903 M8905)#/
 5475  032274  020103  042524  052123
 5476  032302  031440  035065  052040
 5477  032310  053503  046450  034470
 5478  032316  031460  046440  034470
 5479  032324  032460  021451
 5480  032330  022445  047514  044507  MSLT36:  .ASCII  /%%LOGIC TEST 36:  FCS(M8903 M8905)#/
 5481  032336  020103  042524  052123
 5482  032344  031440  035066  043040
 5483  032352  051503  046450  034470
 5484  032360  031460  046440  034470
 5485  032366  032460  021451
 5486  032372  022445  047514  044507  MSLT37:  .ASCII  /%%LOGIC TEST 37:  ACCL(M8903 M8905)#/
 5487  032400  020103  042524  052123
 5488  032406  031440  035067  040440
 5489  032414  041503  024114  034115
 5490  032422  030071  020063  034115
 5491  032430  030071  024465     043
 5492  032435     045  046045  043517  MSLT40:  .ASCII  /%%LOGIC TEST 40:  PE TAPE MARK(M8902)#/
 5493  032442  041511  052040  051505
 5494  032450  020124  030064  020072
 5495  032456  042520  052040  050101
 5496  032464  020105  040515  045522
 5497  032472  046450  034470  031060
 5498  032500  021451
 5499  032502  022445  047514  044507  MSLT41:  .ASCII  /%%LOGIC TEST 41:  NRZ TAPE MARK (M8904)#/
 5500  032510  020103  042524  052123
 5501  032516  032040  035061  047040
 5502  032524  055122  052040  050101
 5503  032532  020105  040515  045522
 5504  032540  024040  034115  030071
 5505  032546  024464     043
 5506  032551     045  046045  043517  MSLT42:  .ASCII  /%%LOGIC TEST 42:  WRAP 3,NRZ,NORMAL,ODD#/
 5507  032556  041511  052040  051505
 5508  032564  020124  031064  020072
 5509  032572  051127  050101  031440
 5510  032600  047054  055122  047054
 5511  032606  051117  040515  026114
 5512  032614  042117  021504
 5513  032620  022445  047514  044507  MSLT43:  .ASCII  /%%LOGIC TEST 43:  WRAP 3,PE,NORMAL,ODD#/
 5514  032626  020103  042524  052123
 5515  032634  032040  035063  053440
 5516  032642  040522  020120  026063
 5517  032650  042520  047054  051117
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 5518  032656  040515  026114  042117
 5519  032664  021504
 5520  032666  022445  047514  044507  MSLT44:  .ASCII  /%%LOGIC TEST 44: WRAP 2,NRZ,NORMAL,ODD#/
 5521  032674  020103  042524  052123
 5522  032702  032040  035064  053440
 5523  032710  040522  020120  026062
 5524  032716  051116  026132  047516
 5525  032724  046522  046101  047454
 5526  032732  042104     043
 5527  032735     045  046045  043517  MSLT45:  .ASCII  /%%LOGIC TEST 45: WRAP 2,PE,NORMAL,ODD#/
 5528  032742  041511  052040  051505
 5529  032750  020124  032464  020072
 5530  032756  051127  050101  031040
 5531  032764  050054  026105  047516
 5532  032772  046522  046101  047454
 5533  033000  042104     043
 5534  033003     045  046045  043517  MSLT46:  .ASCII  /%%LOGIC TEST 46: WRAP 1,NRZ,NORMAL,ODD#/
 5535  033010  041511  052040  051505
 5536  033016  020124  033064  020072
 5537  033024  051127  050101  030440
 5538  033032  047054  055122  047054
 5539  033040  051117  040515  026114
 5540  033046  042117  021504
 5541  033052  022445  047514  044507  MSLT47:  .ASCII  /%%LOGIC TEST 47: WRAP 1,PE,NORMAL,ODD#/
 5542  033060  020103  042524  052123
 5543  033066  032040  035067  053440
 5544  033074  040522  020120  026061
 5545  033102  042520  047054  051117
 5546  033110  040515  026114  042117
 5547  033116  021504
 5548  033120  022445  047514  044507  MSLT50:  .ASCII  /%%LOGIC TEST 50: WRAP 0,NRZ,NORMAL,ODD#/
 5549  033126  020103  042524  052123
 5550  033134  032440  035060  053440
 5551  033142  040522  020120  026060
 5552  033150  051116  026132  047516
 5553  033156  046522  046101  047454
 5554  033164  042104     043
 5555  033167     045  046045  043517  MSLT51:  .ASCII  /%%LOGIC TEST 51: WRAP 0,PE,NORMAL,ODD#/
 5556  033174  041511  052040  051505
 5557  033202  020124  030465  020072
 5558  033210  051127  050101  030040
 5559  033216  050054  026105  047516
 5560  033224  046522  046101  047454
 5561  033232  042104     043
 5562  033235     045  046045  043517  MSLT52:  .ASCII  /%%LOGIC TEST 52: CORE DUMP WRITE (MS906)#/
 5563  033242  041511  052040  051505
 5564  033250  020124  031065  020072
 5565  033256  047503  042522  042040
 5566  033264  046525  020120  051127
 5567  033272  052111  020105  046450
 5568  033300  034470  033060  021451
 5569  033306  022445  047514  044507  MSLT53:  .ASCII  /%%LOGIC TEST 53: CORE DUMP READ (MS906)#/
 5570  033314  020103  042524  052123
 5571  033322  032440  035063  041440
 5572  033330  051117  020105  052504
 5573  033336  050115  051040  040505
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5574  033344  020104  046450  034470
5575  033352  033060  021451
5576  033356  022445  047514  044507  MSLT54:  .ASCII  /%%LOGIC TEST 54: EVEN PARITY WRITE (M8903 M8904)#/
5577  033364  020103  042524  052123
5578  033372  032440  035064  042440
5579  033400  042526  020116  040520
5580  033406  044522  054524  053440
5581  033414  044522  042524  024040
5582  033422  034115  030071  020063
5583  033430  034115  030071  024464
5584  033436     043
5585  033437     045  046045  043517  MSLT55:  .ASCII  /%%LOGIC TEST 55: EVEN PARITY READ(M8903 M8904)#/
5586  033444  041511  052040  051505
5587  033452  020124  032465  020072
5588  033460  053105  047105  050040
5589  033466  051101  052111  020131
5590  033474  042522  042101  046450
5591  033502  034470  031460  046440
5592  033510  034470  032060  021451
5593  033516  022445  047514  044507  MSLT56:  .ASCII  /%%LOGIC TEST 56: READ REVERSE(M8906)#/
5594  033524  020103  042524  052123
5595  033532  032440  035066  051040
5596  033540  040505  020104  042522
5597  033546  042526  051522  024105
5598  033554  034115  030071  024466
5599  033562     043
5600  033563     045  046045  043517  MSLT57:  .ASCII  /%%LOGIC TEST 57: CRC(M8904)#/
5601  033570  041511  052040  051505
5602  033576  020124  033465  020072
5603  033604  051103  024103  034115
5604  033612  030071  024464     043
5605  033617     045  046045  043517  MSLT60:  .ASCII  /%%LOGIC TEST 60: LRC(M8904)#/
5606  033624  041511  052040  051505
5607  033632  020124  030066  020072
5608  033640  051114  024103  034115
5609  033646  030071  024464     043
5610  033653     045  046045  043517  MSLT61:  .ASCII  /%%LOGIC TEST 61: CORRECTABLE DATA (M8902 M8901)#/
5611  033660  041511  052040  051505
5612  033666  020124  030466  020072
5613  033674  047503  051122  041505
5614  033702  040524  046102  020105
5615  033710  040504  040524  024040
5616  033716  034115  030071  020062
5617  033724  034115  030071  024461
5618  033732     043
5619  033733     045  046045  043517  MSLT62:  .ASCII  /%%LOGIC TEST 62: INCORRECTABLE DATA (M8902 M8904)#/
5620  033740  041511  052040  051505
5621  033746  020124  031066  020072
5622  033754  047111  047503  051122
5623  033762  041505  040524  046102
5624  033770  020105  040504  040524
5625  033776  024040  034115  030071
5626  034004  020062  034115  030071
5627  034012  024464     043
5628  034015     045  046045  043517  MSLT63:  .ASCII  /%%LOGIC TEST 63: PEF(M8902)#/
5629  034022  041511  052040  051505
```

```
 5630  034030  020124  031466  020072
 5631  034036  042520  024106  034115
 5632  034044  030071  024462     043
 5633  034051     045  046045  043517  MSLT64. .ASCII  /%%LOGIC TEST 64: FC OVERFLOW (M890E)#/
 5634  034056  041511  052040  051505
 5635  034064  020124  032066  020072
 5636  034072  041506  047440  042526
 5637  034100  043122  047514  020127
 5638  034106  046450  034470  032460
 5639  034114  021451
```

```
 5640
 5641                                        ;MANUAL INSTRUCTION**********
 5642
 5643  034116  052045  050131  020105  MMSG0:  .ASCII  /%TYPE CR WHEN READY;#/
 5644  034124  051103  053440  042510
 5645  034132  020116  042522  042101
 5646  034140  035531     043
 5647  034143     045  046445  052517  MMSG1:  .ASCII  /%%MOUNT TAPE WITH NO WRITE RING, LOAD TO BOT, SET TO ON LINE:#/
 5648  034150  052116  052040  050101
 5649  034156  020105  044527  044124
 5650  034164  047040  020117  051127
 5651  034172  052111  020105  044522
 5652  034200  043516  020054  047514
 5653  034206  042101  052040  020117
 5654  034214  047502  026124  051440
 5655  034222  052105  052040  020117
 5656  034230  047117  046040  047111
 5657  034236  035105     043
 5658  034241     045  042523  020124  MMSG2:  .ASCII  /%SET TO OFFLINE:#/
 5659  034246  047524  047440  043106
 5660  034254  044514  042516  021472
 5661  034262  046445  053117  020105  MMSG3:  .ASCII  /%MOVE FORWARD TO EOT, ONLINE:#/
 5662  034270  047506  053522  051101
 5663  034276  020104  047524  042440
 5664  034304  052117  020054  047117
 5665  034312  044514  042516  021472
 5666  034320  047445  043106  046040  MMSG4:  .ASCII  /%OFF LINE REVERSE PAST EOT, INSERT WRITE RING, ON LINE#/
 5667  034326  047111  020105  042522
 5668  034334  042526  051522  020105
 5669  034342  040520  052123  042440
 5670  034350  052117  020054  047111
 5671  034356  042523  052122  053440
 5672  034364  044522  042524  051040
 5673  034372  047111  026107  047440
 5674  034400  020116  044514  042516
 5675  034406     043
 5676  034407     045  046445  053117  MMSG5:  .ASCII  /%%MOVE TAPE TO BOT; ON LINE#/
 5677  034414  020105  040524  042520
 5678  034422  052040  020117  047502
 5679  034430  035524  047440  020116
 5680  034436  044514  042516     043
```

```
5681
5682                                        ;TAG MESSAGE
5683
5684  034443     045  046123  020101  TMS1:   .ASCII  /%SLA #/
5685  034450     043
5686  034451     045  047502  020124  TMS2:   .ASCII  /%BOT #/
5687  034456     043
5688  034457     045  046524  021440  TMS3:   .ASCII  /%TM #/
5689  034464  044445  041104  021440  TMS4:   .ASCII  /%IDB #/
5690  034472  051445  053504  020116  TMS5:   .ASCII  /%SDWN #/
5691  034500     043
5692  034501     045  042520  020123  TMS6:   .ASCII  /%PES #/
5693  034506     043
5694  034507     045  051523  020103  TMS7:   .ASCII  /%SSC #/
5695  034514     043
5696  034515     045  051104  020131  TMS8:   .ASCII  /%DRY #/
5697  034522     043
5698  034523     045  050104  020122  TMS9:   .ASCII  /%DPR #/
5699  034530     043
5700  034531     045  052116  020114  TMS10:  .ASCII  /%NTL #/
5701  034536     043
5702  034537     045  047505  020124  TMS11:  .ASCII  /%EOT #/
5703  034544     043
5704  034545     045  051127  020114  TMS12:  .ASCII  /%WRL #/
5705  034552     043
5706  034553     045  047515  020114  TMS13:  .ASCII  /%MOL #/
5707  034560     043
5708  034561     045  044520  020120  TMS14:  .ASCII  /%PIP #/
5709  034566     043
5710  034567     045  051105  020122  TMS15:  .ASCII  /%ERR #/
5711  034574     043
5712  034575     045  052101  020101  TMS16:  .ASCII  /%ATA #/
5713  034602     043
5714  034603     045  046111  020106  TMS17:  .ASCII  /%ILF #/
5715  034610     043
5716  034611     045  046111  020122  TMS18:  .ASCII  /%ILR #/
5717  034616     043
5718  034617     045  046522  020122  TMS19:  .ASCII  /%RMR #/
5719  034624     043
5720  034625     045  050103  051101  TMS20:  .ASCII  /%CPAR #/
5721  034632  021440
5722  034634  043045  052115  021440  TMS21:  .ASCII  /%FMT #/
5723  034642  042045  040520  020122  TMS22:  .ASCII  /%DPAR #/
5724  034650     043
5725  034651     045  047111  020103  TMS23:  .ASCII  /%INC #/
5726  034656     043
5727  034657     045  050126  020105  TMS24:  .ASCII  /%VPE #/
5728  034664     043
5729  034665     045  042520  020106  TMS25:  .ASCII  /%PEF #/
5730  034672     043
5731  034673     045  051114  020103  TMS26:  .ASCII  /%LRC #/
5732  034700     043
5733  034701     045  051516  020107  TMS27:  .ASCII  /%NSG #/
5734  034706     043
5735  034707     045  041506  020105  TMS28:  .ASCII  /%FCE #/
5736  034714     043
```

```
 5737  034715     045  051503  021440  TMS29:  .ASCII  /%CS #/
 5738  034722  044445  046524  021440  TMS30:  .ASCII  /%ITM #/
 5739  034730  047045  043105  021440  TMS31:  .ASCII  /%NEF #/
 5740  034736  042045  042524  021440  TMS32:  .ASCII  /%DTE #/
 5741  034744  047445  044520  021440  TMS33:  .ASCII  /%OPI #/
 5742  034752  053445  044522  042524  TMS33A: .ASCII  /%WRITE OPI #/
 5743  034760  047440  044520  021440
 5744  034766  051045  040505  020104  TMS33B: .ASCII  /%READ OPI #/
 5745  034774  050117  020111     043
 5746  035001     045  047125  020123  TMS34:  .ASCII  /%UNS #/
 5747  035006     043
 5748  035007     045  047503  051122  TMS35:  .ASCII  /%CORR #/
 5749  035014  021440
 5750  035016  041445  041522  021440  TMS36:  .ASCII  /%CRC #/
 5751  035024  052045  053503  021440  TMS37:  .ASCII  /%TCW #/
 5752  035032  043045  051503  021440  TMS38:  .ASCII  /%FCS #/
 5753  035040  040445  041503  020114  TMS39:  .ASCII  /%ACCL #/
 5754  035046     043
 5755
 5756          035050                          .EVEN
 5757                                          ;WRITE BUFFER
 5758
 5759  035050  000100                  WDATA:  .REPT   100
 5760                                          -1
 5761                                          .ENDR
 5762  035050  177777                          -1
 5763  035052  177777                          -1
 5764  035054  177777                          -1
 5765  035056  177777                          -1
 5766  035060  177777                          -1
 5767  035062  177777                          -1
 5768  035064  177777                          -1
 5769  035066  177777                          -1
 5770  035070  177777                          -1
 5771  035072  177777                          -1
 5772  035074  177777                          -1
 5773  035076  177777                          -1
 5774  035100  177777                          -1
 5775  035102  177777                          -1
 5776  035104  177777                          -1
 5777  035106  177777                          -1
 5778  035110  177777                          -1
 5779  035112  177777                          -1
 5780  035114  177777                          -1
 5781  035116  177777                          -1
 5782  035120  177777                          -1
 5783  035122  177777                          -1
 5784  035124  177777                          -1
 5785  035126  177777                          -1
 5786  035130  177777                          -1
 5787  035132  177777                          -1
 5788  035134  177777                          -1
 5789  035136  177777                          -1
 5790  035140  177777                          -1
 5791  035142  177777                          -1
 5792  035144  177777                          -1
```

```
5793  035146  177777                    -1
5794  035150  177777                    -1
5795  035152  177777                    -1
5796  035154  177777                    -1
5797  035156  177777                    -1
5798  035160  177777                    -1
5799  035162  177777                    -1
5800  035164  177777                    -1
5801  035166  177777                    -1
5802  035170  177777                    -1
5803  035172  177777                    -1
5804  035174  177777                    -1
5805  035176  177777                    -1
5806  035200  177777                    -1
5807  035202  177777                    -1
5808  035204  177777                    -1
5809  035206  177777                    -1
5810  035210  177777                    -1
5811  035212  177777                    -1
5812  035214  177777                    -1
5813  035216  177777                    -1
5814  035220  177777                    -1
5815  035222  177777                    -1
5816  035224  177777                    -1
5817  035226  177777                    -1
5818  035230  177777                    -1
5819  035232  177777                    -1
5820  035234  177777                    -1
5821  035236  177777                    -1
5822  035240  177777                    -1
5823  035242  177777                    -1
5824  035244  177777                    -1
5825  035246  177777                    -1
5826
5827
5828                                    ;READ BUFFER
5829
5830  035250  000100            RDATA:  .REPT   100
5831                                    0
5832                                    .ENDR
5833  035250  000000                    0
5834  035252  000000                    0
5835  035254  000000                    0
5836  035256  000000                    0
5837  035260  000000                    0
5838  035262  000000                    0
5839  035264  000000                    0
5840  035266  000000                    0
5841  035270  000000                    0
5842  035272  000000                    0
5843  035274  000000                    0
5844  035276  000000                    0
5845  035300  000000                    0
5846  035302  000000                    0
5847  035304  000000                    0
5848  035306  000000                    0
```

```
 5849  035310  000000                          0
 5850  035312  000000                          0
 5851  035314  000000                          0
 5852  035316  000000                          0
 5853  035320  000000                          0
 5854  035322  000000                          0
 5855  035324  000000                          0
 5856  035326  000000                          0
 5857  035330  000000                          0
 5858  035332  000000                          0
 5859  035334  000000                          0
 5860  035336  000000                          0
 5861  035340  000000                          0
 5862  035342  000000                          0
 5863  035344  000000                          0
 5864  035346  000000                          0
 5865  035350  000000                          0
 5866  035352  000000                          0
 5867  035354  000000                          0
 5868  035356  000000                          0
 5869  035360  000000                          0
 5870  035362  000000                          0
 5871  035364  000000                          0
 5872  035366  000000                          0
 5873  035370  000000                          0
 5874  035372  000000                          0
 5875  035374  000000                          0
 5876  035376  000000                          0
 5877  035400  000000                          0
 5878  035402  000000                          0
 5879  035404  000000                          0
 5880  035406  000000                          0
 5881  035410  000000                          0
 5882  035412  000000                          0
 5883  035414  000000                          0
 5884  035416  000000                          0
 5885  035420  000000                          0
 5886  035422  000000                          0
 5887  035424  000000                          0
 5888  035426  000000                          0
 5889  035430  000000                          0
 5890  035432  000000                          0
 5891  035434  000000                          0
 5892  035436  000000                          0
 5893  035440  000000                          0
 5894  035442  000000                          0
 5895  035444  000000                          0
 5896  035446  000000                          0
 5897
 5898                                          ;WRAP AROUND MESSAGES******
 5899
 5900  035450  051445  052105  050125  WMSG2:  .ASCII  /%SETUP ERROR%#/
 5901  035456  042440  051122  051117
 5902  035464  021445
 5903  035466  050045  052101  047122  WMSG3:  .ASCII  /%PATRN NUMBER = #/
 5904  035474  047040  046525  042502
```

```
 5905  035502  020122  020075     043
 5906  035507     045  047516  026516  WMSG4:   .ASCII  /%NON-EXISTANT DRIVE%#/
 5907  035514  054105  051511  040524
 5908  035522  052116  042040  044522
 5909  035530  042526  021445
 5910  035534  041445  030523  021440  WMSG6:   .ASCII  /%CS1 #/
 5911  035542  053445  020103     043  WMSG6A:  .ASCII  /%WC #/
 5912  035547     045  040502  021440  WMSG6B:  .ASCII  /%BA #/
 5913  035554  043045  020103     043  WMSG6C:  .ASCII  /%FC #/
 5914  035561     045  051503  020062  WMSG6D:  .ASCII  /%CS2 #/
 5915  035566     043
 5916  035567     045  051504  021440  WMSG6E:  .ASCII  /%DS #/
 5917  035574  042445  020122     043  WMSG6F:  .ASCII  /%ER #/
 5918  035601     045  051501  021440  WMSG6G:  .ASCII  /%AS #/
 5919  035606  041445  020103     043  WMSG6H:  .ASCII  /%CC #/
 5920  035613     045  041104  021440  WMSG6I:  .ASCII  /%DB #/
 5921  035620  046445  020122     043  WMSG6J:  .ASCII  /%MR #/
 5922  035625     045  052104  021440  WMSG6K:  .ASCII  /%DT #/
 5923  035632  052045  020103     043  WMSG6L:  .ASCII  /%TC #/
 5924  035637     045  047123  021440  WMSG6M:  .ASCII  /%SN #/
 5925  035644  041045  042101  042040  WMSG16:  .ASCII  /%BAD DATA#/
 5926  035652  052101  021501
 5927  035656  043445  020072     043  WMSG17:  .ASCII  /%G: #/
 5928  035663     045  035102  021440  WMSG20:  .ASCII  /%B: #/
 5929  035670  041445  035116  021440  WMSG21:  .ASCII  /%CN: #/
 5930  035676  041045  042101  051440  WMSG23:  .ASCII  /%BAD STATUS#/
 5931  035704  040524  052524  021523
 5932  035712  047045  020117  047111  WMSG24:  .ASCII  /%NO INTERRUPT#/
 5933  035720  042524  051122  050125
 5934  035726  021524
 5935  035730  047045  020117  046103  WMSG25:  .ASCII  /%NO CLOCK UP#/
 5936  035736  041517  020113  050125
 5937  035744     043
 5938  035745     045  047516  041440  WMSG26:  .ASCII  /%NO CLOCK DOWN#/
 5939  035752  047514  045503  042040
 5940  035760  053517  021516
 5941  035764  042045  052101  020101  WMSG27:  .ASCII  /%DATA PAT: #/
 5942  035772  040520  035124     043
 5943  035777     045  040502  020104  WMSG28:  .ASCII  /%BAD PREAMBLE#/
 5944  036004  051120  040505  041115
 5945  036012  042514     043
 5946  036015     045  040502  020104  WMSG29:  .ASCII  /%BAD POSTAMBLE#/
 5947  036022  047520  052123  046501
 5948  036030  046102  021505
 5949  036034  042445  051117  041440  WMSG31:  .ASCII  /%EOR CLEAR DID NOT CLEAR GO%#/
 5950  036042  042514  051101  042040
 5951  036050  042111  047040  052117
 5952  036056  041440  042514  051101
 5953  036064  043440  022517     043
 5954  036071     040  040520  051124  WMSG32:  .ASCII  / PATRN #/
 5955  036076  020116     043
 5956
 5957  036101     045  043536     043  $CNTG:   .ASCII  /% G#/
 5958  036105     045  053523  036522  $MSWR:   .ASCII  /%SWR= #/
 5959  036112  021440
 5960  036114  020040  042516  036527  $MNEW:   .ASCII  /  NEW= #/
```

```
 5961  036122  021440
 5962  036124  037440  022440     043  $QUEST: .ASCII  / ? %#/
 5963
 5964          036132                          .EVEN
 5965  036132  000000                  PRE:    0
 5966          000050                          .REPT   50
 5967                                          0
 5968                                          .ENDR
 5969  036134  000000                          0
 5970  036136  000000                          0
 5971  036140  000000                          0
 5972  036142  000000                          0
 5973  036144  000000                          0
 5974  036146  000000                          0
 5975  036150  000000                          0
 5976  036152  000000                          0
 5977  036154  000000                          0
 5978  036156  000000                          0
 5979  036160  000000                          0
 5980  036162  000000                          0
 5981  036164  000000                          0
 5982  036166  000000                          0
 5983  036170  000000                          0
 5984  036172  000000                          0
 5985  036174  000000                          0
 5986  036176  000000                          0
 5987  036200  000000                          0
 5988  036202  000000                          0
 5989  036204  000000                          0
 5990  036206  000000                          0
 5991  036210  000000                          0
 5992  036212  000000                          0
 5993  036214  000000                          0
 5994  036216  000000                          0
 5995  036220  000000                          0
 5996  036222  000000                          0
 5997  036224  000000                          0
 5998  036226  000000                          0
 5999  036230  000000                          0
 6000  036232  000000                          0
 6001  036234  000000                          0
 6002  036236  000000                          0
 6003  036240  000000                          0
 6004  036242  000000                          0
 6005  036244  000000                          0
 6006  036246  000000                          0
 6007  036250  000000                          0
 6008  036252  000000                          0
 6009  036254  000000                  POST:   0
 6010          000050                          .REPT   50
 6011                                          0
 6012                                          .ENDR
 6013  036256  000000                          0
 6014  036260  000000                          0
 6015  036262  000000                          0
 6016  036264  000000                          0
```

```
6017  036266  000000                          0
6018  036270  000000                          0
6019  036272  000000                          0
6020  036274  000000                          0
6021  036276  000000                          0
6022  036300  000000                          0
6023  036302  000000                          0
6024  036304  000000                          0
6025  036306  000000                          0
6026  036310  000000                          0
6027  036312  000000                          0
6028  036314  000000                          0
6029  036316  000000                          0
6030  036320  000000                          0
6031  036322  000000                          0
6032  036324  000000                          0
6033  036326  000000                          0
6034  036330  000000                          0
6035  036332  000000                          0
6036  036334  000000                          0
6037  036336  000000                          0
6038  036340  000000                          0
6039  036342  000000                          0
6040  036344  000000                          0
6041  036346  000000                          0
6042  036350  000000                          0
6043  036352  000000                          0
6044  036354  000000                          0
6045  036356  000000                          0
6046  036360  000000                          0
6047  036362  000000                          0
6048  036364  000000                          0
6049  036366  000000                          0
6050  036370  000000                          0
6051  036372  000000                          0
6052  036374  000000                          0
6053  036376  000000                  WBUFF:  0
6054          037010                          .=.+410
6055  037010  000000                  RBUFF:  0
6056
6057          000001                          .END
```

```
ABORT   025736            1925    5040#
ACT11M  000620            1688#   1948    5022*
ADDFL   000756            1742#   4439*   4451    4463    4492*
ADUMPM  000622            1690#   5027*
AS      000526            1648#   4515    4551    4594
ASF     000740            1735#
ATAF    000730            1731#
ATTA    023412            4578    4581#
ATTB    023434            4582    4585#
ATTC    023456            4590#   4593
ATTD    023466            4589    4594#
ATTN    023372            4530    4577#
ATTP    023476            4580    4584    4595    4597#   4615
ATTPA   023524            4600    4603#
ATTX    023550            4598    4608#
ATTXA   023562            4609    4611#
ATTXX   023604            4612    4614    4616#
AUTOM   000616            1687#   1918    2034    2106    2135    2542    2572    2601    2631    5014*   5017*
BA      000514            1643#   2769*   3442*   3464*   3497*   3537*   3585*   3632*   3670*   3832*   4505
BAE     000544            1655#   2020
BOTT    017264            3193    3826    3942#
BOTTA   017310            3946#   3947
BOTTX   017324            3943    3949#
CC      000530            1649#   3452    3557    3559    3604
CKMODE  025644            1917    5014#
CKSWR   025114            2079    4664    4900#   5006
CNTLU   025166            1941    4910#   4926
COUNT   025110            4898#   4920*   4931    4947*
CRCNT   001004            1753#   4058*   4123    4152*   4165*   4216    4232*   4255*   4282    4301*   4309*   4346    4371*
CS      000520            1645#   2039*   2043*   2045    2163*   2164*   2166    2190*   2191*   2277*   2278*   2417*   2418*
                          2721*   2724*   2774*   2812*   3833    4011    4509    4703*   4704*
C1      000510            1641#   1981    2044    2165    2193    2198    2234    2419*   2420    2443    2450*   2451    2456
                          2491*   2519*   2521*   2669*   2695*   2747*   2773*   2827*   2854*   2885    2916*   2926*   2972*
                          2997*   3031*   3059*   3102*   3152*   3176*   3197*   3444*   3466*   3498*   3538*   3587*   3633*
                          3672*   3860*   3880*   3945*   3959*   4007    4407    4501    4531*
DATAD   000770            1747#   3781*   3796*   3805*   3809*   3832
DATAO   001046            1779#
DATA1   001050            1780#
DATA2   001052            1781#
DATA3   001054            1782#
DATBL   001044            1778#   3730
DATC    000764            1745#   3780*   3795*   3845*   3846*   3847*   3859
DAT1    016044            1779    3747#
DAT1A   016050            3748#   3758    3763
DAT1B   016054            3749#   3751
DAT2    016066            1780    3757#
DAT3    016074            1781    3762#
DAT4    016104            1782    3767#
DAT4A   016112            3769#   3772
DB      000532            1650#
DCA     023160            4533#   4536
DCAO    023174            4534    4537#
DCB     023234            4547#   4550
DCC     023244            4546    4551#
DCD     023134            4527#   4528
DCE     023254            4538    4540    4542    4552    4554#   4571
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DCEA    023302          4557    4560#
DCEX    023322          4555    4564#
DCEXA   023334          4565    4567#
DCEXX   023356          4568    4570    4572#
DCHK    020062          3999    4056#   4431
DCHKA   020136          4063    4065    4067#
DCHKA0  020112          4060    4062#
DCHKA1  020166          4069    4071    4073#
DCHKA2  020214          4074    4079#
DCHKB   020266          4076    4078    4080    4082    4085    4089#
DCHKC   020336          4097    4100#
DCHKD   020344          4095    4102#
DCHKE   020714          4061    4173#
DCHKX   020650          4088    4154    4158    4160#   4235    4239    4306
DCHKX1  020672          4161    4163    4165#
DCHK0   020346          4093    4099    4101    4103#   4156
DCHK1   020400          4108    4111#
DCHK1A  020436          4112    4119#
DCHK2   020526          4104    4106    4133#
DCHK2A  020572          4139    4145#
DCHK2B  020574          4134    4137    4142    4144    4146#
DCHK3   020620          4148    4150    4152#
DCKEP   021252          4223    4229    4240#
DCKEP0  021302          4244    4246#
DCKE0   020730          4176#   4238
DCKE1   020740          4179#   4185
DCKE10  021212          4197    4199    4230#
DCKE11  021236          4234    4236#
DCKE12  021246          4237    4239#
DCKE2   020750          4180    4182#
DCKE3   020760          4183    4186#
DCKE4   021000          4189    4192#
DCKE5   021012          4191    4193    4195#
DCKE6   021050          4201    4204#
DCKE7   021106          4205    4212#
DERFL   000776          1750#   4057*   4089*   4111    4120*   4162    4167*   4204    4212*   4256*   4310*   4368*
DOUT    025424          4128    4132    4221    4227    4287    4291    4295    4299    4355    4359    4363    4367    4955#
                        4971    4973
DOUTD   025506          4969#
DOUT1   025440          4958#   4959    4967
DOUT2   025466          4961    4964#
DOUT3   025474          4963    4965#
DRIVE   000040          1546#
DRVCLR  023130          2685    2713    2736    2760    2814    2840    2880    2903    2956    3017    3044    3228    3484
                        3523    3571    3618    3660    4526#   4572
DRVN    000634          1701#   2037*   2040*   2041    2043    2049    2154    2168    2171    2191    2278    2418    4013
                        4544    4587    4704
DRVTP   000606          1678#
DS      000522          1646#   2485    2492    2496    2557    2587    2616    2646    3060    3077    3085    3098    3178
                        3199    3223    3446    3468    3500    3546    3595    3644    3861    3942    3946    4016    4511
                        4533    4537    4541    4577    4581
DSUP    015660          3711#   3824
DS0     015750          3712    3714    3725#
DS1     015774          3731#   3752    3773
DS2     016014          3735#   3737
DS3     016024          3732    3738#
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DS4     016034  3740# 3742
DT      000536  1652# 2057  2059  2061  2280  3731
EMADDR  000632  1700# 2151* 2192* 2226* 2300* 2309* 2349* 2389* 2414* 2441* 2483* 2516* 2552*
                2582* 2611* 2641* 2662* 2690* 2718* 2741* 2764* 2821* 2845* 2888* 2909* 2932
                2962* 3023* 3054* 3073* 3096* 3120* 3140* 3169* 3191* 3239* 3260* 3270* 3290*
                3300* 3321* 3331* 3351* 3361* 3380* 3400* 3410* 3420* 3436* 3491* 3531* 3580*
                3626* 3664* 4036  4109  4202  4271  4335  4417  4446  4558  4601  4627
EORP    022246  3938  4400#
EORPA   022242  2712  2759  2813  2955  4399#
EORPX   022432  4425  4430  4432#
EORP1   022302  4407# 4410  4412
EORP1A  022350  4416  4419#
EORP2   022374  4408  4414  4422  4424#
EORP3   022416  4427  4429#
ER      000524  1647# 2201  2231  2670  2698  2725  2748  2794  2807  2829  2863  2869  2875
                2893  2917  2943  2949  2976  2986  3001  3012  3033  3206  3211  3218  3450
                3472  3479  3504  3517  3550  3565  3599  3611  3648  3654  4020  4513  4539
ERADD   000702  1720# 2181* 2209* 2212* 2215* 2241* 2246* 2301* 2335* 2339* 2368* 2372* 2403*
                2431* 2460* 2466* 2472* 2499* 2503* 2507* 2525* 2561* 2591* 2620* 2650* 2673*
                2701* 2728* 2751* 2801* 2832* 2871* 2896* 2908* 2982* 3008* 3036* 3062* 3072*
                3095* 3121* 3141* 3182* 3203* 3208* 3213* 3474* 3506* 3515* 3552* 3562* 3601*
                3609* 3650* 3687* 4006* 4010* 4015* 4019* 4041  4438* 4449  4630
ERRF    000736  1734#
EXEC    016710  3784  3799  3816  3874#
EXFL    000726  1730# 2178* 2180* 2208* 2211* 2214* 2297* 2299* 2674* 2702* 2729* 2752* 2802*
                2833* 2872* 2895* 2919* 2945* 2983* 3009* 3037* 3063* 3079* 3088* 3105* 3113*
                3126* 3133* 3146* 3159* 3183* 3204* 3209* 3214* 3475* 3507* 3553* 3602* 3651*
                3688* 4437* 4455  4458  4493*
EXW2    017326  3879  3953#
EXW2A   017354  3956  3958#
EXW2B   017372  3961# 3962  3968
EXW2C   017406  3964# 3965
EXW2E   017426  3969#
EXW2F   017434  3971# 3972  3974
EXW2G   017464  3976  3979#
EXW2H   017500  3953  3980  3982#
EXW2J   017512  3985# 3993
EXW2J0  017532  3988  3991#
EXW2J1  017534  3990  3992#
EXW2K   017554  3995  3997#
EXW2X   017570  3998  4000#
EX0     016726  3875  3877#
EX1     016742  3878  3880#
EX1A    016756  3883# 3886  3888
EX2     016776  3884  3889#
EX3     017022  3892  3894#
EX5     017054  3897  3902#
EX5A    017060  3895  3901  3903#  3937
EX5A1   017114  3908  3911#
EX5B    017150  3910  3913  3916  3918#
EX5C    017200  3904  3925#
EX5C0   017244  3930  3934#
EX5C1   017250  3933  3935#
EX5D    017254  3924  3936#
FC      000516  1644# 2230* 2233  2243  2392* 2393  2448* 2489* 2696* 2722* 2770* 2825* 2852*
                2915* 2924* 2971* 3058* 3129* 3195* 3441* 3463* 3496* 3536* 3540  3584* 3589
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                        3630*   3634    3668*   3683    3827*   3830*   4507
FUN     000762          1744#   3779*   3794*   3804*   3811*   3860
HDRFL   000630          1699#   2076*   4005*   4034    4040*   4056*   4107    4119*   4166*   4200    4213*   4254*   4269
                        4279*   4308*   4333    4343*   4415    4444    4448*   4556    4599    4607*   4625    4629*
HERE    002664          2128    2134#
ILFT    000546          1659#   2665
INIT1   024154          2229    2310    2352    2391    2442    2455    2484    2495    2517    2555    2666    2692    2720
                        2743    2767    2823    2846    2891    2911    2921    2965    2991    3025    3056    3075    3097
                        3108    3122    3128    3142    3149    3170    3192    3438    3460    3492    3533    3582    3628
                        3666    3825    3948    4703#
INIT2   024162          2585    2614    2644    4704#
INMT    024134          2551    2581    2610    2640    4695#
INST    024200          2554    2584    2613    2643    4710#
ITAMT   000610          1679#   2766*   2816*   2964*   3018*   4687
ITCNT   000712          1724#   4482    4646    4684*   4686*   4687
ITER    024072          2221    2255    2343    2382    2408    2435    2477    2510    2528    2563    2593    2622    2652
                        2684    2708    2735    2758    2815    2839    2879    2902    2954    3016    3043    3065    3090
                        3115    3135    3161    3185    3227    3247    3278    3308    3339    3370    3391    3483    3522
                        3570    3617    3659    3690    4682#
ITER0   024102          4678    4684#   4688
ITER1   024110          4683    4686#
ITRLP   000724          1729#   2071*   2072*   2099*   2100*   4690
LTADD   000752          1740#   2069*   2070*   2071    2073    2077    2097*   2098*   2099
LTGA    022500          4442    4444#   4491
LTGA1   022516          4445    4448#
LTGA2   022550          4452    4455#
LTGB    022576          4459    4461#
LTGC    022602          4456    4462#
LTGC0   022670          4466    4477#
LTGD    022674          4464    4478#
LTGER   022460          2183    2217    2303    2897    4440#
LTGER0  022452          2675    2703    2730    2753    2803    2834    2873    2920    2946    2984    3010    3038    3064
                        3081    3089    3107    3114    3127    3134    3148    3160    3184    3205    3210    3215    3476
                        3508    3554    3603    3652    4439#
LTGER1  023620          2244    2248    2337    2341    2370    2377    2405    2433    2464    2470    2476    2562    2592
                        2621    2651    3516    3563    3610    3689    4621#
LTGER2  023612          2501    2505    2509    2527    4620#
LTGER3  022440          2679    2707    2734    2757    2811    2838    2878    2953    2989    3015    3042    3221    3456
                        3482    3521    3569    3616    3658    4437#
LTGX    022724          4443    4479    4484#
LTGXA   022736          4485    4487#
LTGXX   022760          4488    4490    4492#
LTG1A   023640          4623    4625#   4656
LTG1B   023656          4626    4629#
LTG1C   023766          4643    4648#
LTG1T   023736          4633    4642#
LTG1X   023772          4624    4649#
LTG1XX  024026          4653    4655    4657#
LTG1X1  024004          4650    4652#
LT1     002724          1801    1802    2145#
LT1A    003026          2163#   2177    2182
LT1B    003066          2167    2171#
LT1C    003100          2169    2172    2174#   2184
LT1ER   003110          2170    2178#
LT1ER1  003120          2173    2180#
LT1ER2  003126          2179    2181#
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LT1G	002750	2151#	2175		
LT1G0	002740	2146	2149#		
LT1X	003150	2148	2160	2185#	
LT10	004564	1815	2413#		
LT10A	004602	2417#	2430	2432	
LT10A1	004600	2416#	2428		
LT10B	004642	2423	2425#	2434	
LT10E1	004664	2424	2431#		
LT10IT	004566	1816	2414#		
LT10X	004710	2426	2435#		
LT11	004720	1817	2440#		
LT11B	004752	2445	2447#	2465	2469
LT11C	005016	2453	2455#	2471	2475
LT11E1	005040	2446	2460#		
LT11E2	005072	2454	2466#		
LT11E3	005124	2459	2472#		
LT11IT	004722	1818	2441#	2463	
LT11X	005152	2458	2477#		
LT12	005162	1819	2482#		
LT12B	005212	2486	2488#	2502	2504
LT12C	005254	2493	2495#	2506	2508
LT12E1	005274	2487	2499#		
LT12E2	005316	2494	2503#		
LT12E3	005340	2498	2507#		
LT12IT	005164	1820	2483#	2500	
LT12X	005360	2497	2510#		
LT13	005370	1821	2515#		
LT13A	005430	2522#	2523		
LT13E1	005434	2524#			
LT13IT	005400	1822	2517#	2526	
LT13X	005462	2518	2528#		
LT14	005472	1823	2542#		
LT14A	005522	2548	2552#		
LT14IT	005540	1824	2555#	2560	
LT14X	005600	2559	2563#		
LT14XX	005604	2543	2550	2564#	
LT15	005610	1825	2571#		
LT15A	005640	2578	2582#		
LT15IT	005656	1826	2585#	2590	
LT15X	005716	2589	2593#		
LT15XX	005722	2573	2580	2594#	
LT16	005726	1827	2600#		
LT16A	005756	2607	2611#		
LT16IT	005774	1828	2614#	2619	
LT16X	006034	2618	2622#		
LT16XX	006040	2602	2609	2623#	
LT17	006044	1829	2630#		
LT17A	006074	2637	2641#		
LT17IT	006112	1830	2644#	2649	
LT17X	006152	2648	2652#		
LT17XX	006156	2632	2639	2653#	
LT2	003154	1803	1804	2189#	
LT2A	003214	2196#	2206	2220	
LT2B	003234	2199	2201#		
LT2C	003250	2202	2204#		
LT2ERG	003330	2210	2213	2216#	

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LT2ER2  003276            2203    2211#
LT2ER3  003314            2214#
LT2IT   003156            2190#
LT2LP   003344            2216    2219#
LT2X    003352            2207    2221#
LT20    006162            1831    2662#
LT20A   006210            2663    2666#   2683
LT20B   006266            2672    2677#
LT20C   006276            2676    2678    2680#
LT20IT  006176            1832    2664#
LT20X   006312            2681    2684#
LT21    006326            1833    2690#
LT21A   006432            2700    2705#
LT21B   006442            2704    2706    2708#
LT21IT  006342            1834    2691    2692#
LT21XA  006452            2710#   2711
LT22    006472            1835    2718#
LT22A   006572            2727    2732#
LT22IT  006506            1836    2719    2720#
LT22X   006602            2731    2733    2735#
LT23    006616            1837    2741#
LT23A   006716            2750    2755#
LT23IT  006632            1838    2742    2743#
LT23X   006726            2754    2756    2758#
LT24    006746            1839    2764#
LT24A   007060            2778#   2779    2781
LT24B   007074            2783#   2789
LT24BO  007116            2786    2788#
LT24C   007130            2792#   2793
LT24D   007212            2795    2806#
LT24IT  006762            1840    2765    2766#
LT24X   007236            2805    2810    2812#
LT25    007272            1841    2821#
LT25A   007400            2831    2836#
LT25IT  007306            1842    2822    2823#
LT25X   007410            2835    2837    2839#
LT26    007424            1843    2845#
LT26A   007510            2857#   2858
LT26B   007534            2863#   2866    2868
LT26C   007610            2864    2875#
LT26IT  007432            1844    2846#   2870
LT26W   007440            2848#   2849
LT26X   007624            2874    2877    2879#
LT27    007640            1845    2885#
LT27A   007674            2887    2891#   2901
LT27B   007732            2894    2898#
LT27IT  007664            1846    2889#
LT27X   007742            2899    2902#
LT27XX  007752            2886    2904#
LT3     003362            1805    2225#
LT3A    003402            2229#   2240    2242    2254
LT3B    003422            2233#   2245    2247
LT3C    003436            2236#   2249
LT3ER1  003450            2232    2241#
LT3ER2  003476            2235    2246#
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LT3XX	003536	2251	2255#			
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LT30B	010122	2928#	2931			
LT30C	010162	2929	2938#			
LT30D	010200	2941#	2942			
LT30E	010230	2944	2948#			
LT301T	010000	1848	2910	2911#		
LT30X	010254	2937	2947	2952	2954#	
LT31	010274	1849	2962#			
LT31A	010370	2976#	2979	2981		
LT31B	010432	2977	2986#			
LT31C	010450	2988	2991#	3007		
LT31D	010516	3001#	3004	3006		
LT31E	010566	3002	3012#			
LT311T	010310	1850	2963	2964#		
LT31W	010324	2967#	2968			
LT31W1	010456	2993#	2994			
LT31X	010602	2985	2990	3011	3014	3016#
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LT321T	010640	1852	3024	3025#		
LT32X	010742	3039	3041	3043#		
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LT331T	010772	1854	3055	3056#		
LT33X	011050	3061	3065#			
LT34	011060	1855	3070#			
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LT35A	011324	3104	3108#	3112		
LT351T	011236	1858	3097#	3106		
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LT36	011374	1859	3120#			
LT36A	011444	3124	3128#	3132		
LT361T	011410	1860	3122#	3125		
LT36X	011504	3131	3135#			
LT37	011514	1861	3140#			
LT37A	011570	3145	3149#	3158		
LT37B	011622	3154#	3157			
LT371T	011530	1862	3142#	3147		
LT37X	011654	3155	3161#			
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LT4A	003642	2277#	2296	2302		
LT4B	003706	2282	2286#			
LT4C	003720	2287	2289#			
LT4D	003740	2284	2293#	2304		
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LT4ER1	003752	2285	2297#			

LT4ER2	003762	2288	2299#	
LT4G	003572	2266#	2294	
LT4GO	003562	2261	2264#	
LT4X	004020	2263	2274	2305#
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LT40A	011746	3178#	3181	
LT40IT	011706	1864	3168	3170#
LT40W	011714	3172#	3173	
LT40X	012002	3179	3185#	
LT40XX	012006	3167	3186#	
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LT41A	012070	3199#	3202	
LT41B	012124	3200	3206#	
LT41C	012154	3207	3211#	
LT41D	012206	3212	3217#	
LT41IT	012026	1866	3190	3192#
LT41X	012226	3216	3220	3222#
LT42	012260	1867	1868	3235#
LT42A	012324	3241#	3262	3423
LT42B	012336	3242	3243#	3246
LT43	012372	1869	1870	3253#
LT43A	012404	3254	3256#	
LT44	012454	1871	1872	3266#
LT44A	012520	3272#	3292	
LT44B	012532	3273	3274#	3277
LT45	012562	1873	1874	3283#
LT45A	012574	3284	3286#	
LT46	012644	1875	1876	3296#
LT46A	012710	3302#	3323	3402
LT46B	012722	3303	3304#	3307
LT47	012752	1877	1878	3313#
LT47A	012764	3314	3316#	
LT5	004024	1809	2309#	
LT5A	004044	2313#	2322	2336
LT5B	004070	2317	2319#	2338
LT5C	004100	2320	2323#	
LT5D	004110	2325#	2334	2340
LT5E	004134	2329	2331#	2342
LT5ER1	004146	2318	2335#	
LT5ER2	004172	2330	2339#	
LT5IT	004032	1810	2310#	
LT5X	004216	2332	2343#	
LT50	013040	1879	1880	3327#
LT50A	013104	3333#	3353	3412
LT50B	013116	3334	3335#	3338
LT51	013146	1881	1882	3344#
LT51A	013160	3345	3347#	
LT52	013230	1883	1884	3357#
LT52A	013306	3364	3365#	3369
LT52X	013332	3367	3370#	
LT53	013342	1885	1886	3376#
LT53A	013426	3383	3385#	3390
LT53X	013460	3387	3391#	
LT54	013470	1887	1888	3396#
LT55	013540	1889	1890	3406#
LT56	013610	1891	1892	3416#

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LT57A	013770	3446#	3449	
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LT57B2	014052	3455	3460#	
LT57C	014124	3468#	3471	
LT57D	014140	3469	3472#	
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LT57PS	013676	3434#	3435	
LT57X	014210	3477	3481	3483#
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LT6B	004250	2353#	2369	
LT6C	004274	2357	2359#	2371 · 2381
LT6D	004310	2360	2362#	2379
LT6ER1	004332	2358	2368#	
LT6ER2	004356	2361	2372#	
LT6ER4	004420	2376	2380#	
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LT60IT	014244	1896	3490	3492#
LT60X	014436	3509	3520	3522#
LT61	014452	1897	3528#	
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LT61A1	014556	3541	3544#	
LT61B	014566	3546#	3549	
LT61C	014602	3547	3550#	
LT61D	014630	3551	3555#	
LT61E	014632	3556#		
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LT61IT	014500	1898	3532	3533#
LT61X	014714	3564	3568	3570#
LT61XX	014724	3529	3572#	
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LT62B	015060	3596	3599#	
LT62D	015110	3600	3604#	
LT62E	015022	3589#	3592	
LT62E1	015034	3590	3593#	
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LT62IT	014756	1900	3581	3582#
LT62X	015166	3615	3617#	
LT62XX	015176	3578	3619#	
LT63	015202	1901	3623#	
LT63A	015272	3634#	3635	
LT63B	015342	3644#	3647	
LT63C	015356	3645	3648#	
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LT63IT	015230	1902	3627	3628#

LT63X	015430	3653	3657	3659#									
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LT7ER1	004524	2396	2403#										
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LT7X	004550	2398	2407#										
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MR	000534	1651#	2313*	2314	2325*	2326	2447*	2488*	2694*	2746*	2772*	2783*	2787	2790
		2826*	2853*	2859*	2860*	2914*	2925*	2938*	2939*	2970*	2996*	3057*	3101*	3151*
		3175*	3196*	3443*	3465*	3494*	3510	3544*	3593*	3636	3638	3640	3642*	3671*
		3679*	3680*	3857*	3858*	3859*	3874	3876*	3918*	3919	3923*	3925*	3926*	3927
		3961	3963	3964	3966	4400	4403*	4404*	4517					
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MSGD	026020	5042	5060#											
MSGE	026045	5064#												
MSG1	026106	1956	5072#											
MSG10	026655	2246	5140#											
MSG11	026701	2241	5144#											
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MSG15	026761	2339	5155#											
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MSG17	027007	2372	5160#											
MSG18	027023	2368	5163#											
MSG19	027042	2403	3687	5166#										
MSG2	026202	2152	5083#											
MSG2A	026221	2149	5086#											
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MSG21	027113	2460	5174#											
MSG22	027151	2466	5180#											
MSG23	027172	2472	5183#											
MSG24	027225	2499	5188#											
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MSG25A	027302	2507	5196#											
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MSG27	027356	2561	2591	2620	2650	5204#								
MSG3	026350	2181	5102#											
MSG30	027372	2289	5206#											
MSG31	027400	4583	5207#											
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MSG34   027455          5216#
MSG35   027472          5219#
MSG36   027510          5222#
MSG37   027526          5225#
MSG4    026372          2209    2215    5105#
MSG40   027544          4787    5228#
MSG41   027550          2115    5229#
MSG42   027567          3562    5232#
MSG43   027604          4695    5235#
MSG44   027710          1958    5247#
MSG45   027732          1967    5250#
MSG46   027754          4499    5253#
MSG47   030060          4560    5265#
MSG5    026410          2212    5108#
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MSG51   030131          4438    5273#
MSG52   030160          1991    5277#
MSG53   030174          3515    5279#
MSG54   030206          3609    5281#
MSG55   030217          3457    5283#
MSG56   030267          1998    5290#
MSG6    026430          4457    5111#
MSG7    026447          4460    5114#
MSG8    026465          2266    5117#
MSG8A   026504          2264    5120#
MSG9    026633          2301    5136#
MSLT1   030314          2151    5296#
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MSLT12  031104          2483    5362#
MSLT13  031155          2516    5369#
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MSLT2   030370          2192    5304#
MSLT20  031452          2662    5404#
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MSLT22  031565          2718    5417#
MSLT23  031622          2741    5422#
MSLT24  031664          2764    5428#
MSLT25  031724          2821    5434#
MSLT26  031760          2845    5439#
MSLT27  032014          2888    5444#
MSLT3   030447          2226    5312#
MSLT30  032050          2909    5449#
MSLT31  032106          2962    5454#
MSLT32  032142          3023    5459#
MSLT33  032176          3054    5464#
MSLT34  032232          3073    5469#
MSLT35  032266          3096    5474#
MSLT36  032330          3120    5480#
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MSLT40  032435          3169    5492#
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MSLT42  032551          3239    5506#
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MSLT45  032735          3290    5527#
MSLT46  033003          3300    5534#
MSLT47  033052          3321    5541#
MSLT5   030610          2309    5329#
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MSLT51  033167          3351    5555#
MSLT52  033235          3361    5562#
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MSLT54  033356          3400    5576#
MSLT55  033437          3410    5585#
MSLT56  033516          3420    5593#
MSLT57  033563          3436    5600#
MSLT6   030654          2349    5335#
MSLT60  033617          3491    5605#
MSLT61  033653          3531    5610#
MSLT62  033733          3580    5619#
MSLT63  034015          3626    5628#
MSLT64  034051          3664    5633#
MSLT7   030720          2389    5341#
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NRZOF   000672          1716#   1993    3070    3166    3253    3283    3313    3344    3528    3577    3623
NXTDRV  002216          2038#   2055
NXTSLV  002270          2047#   2058    2062    2108
OCTP    024660          1961    1970    2118    3718    4046    4050    4118    4124    4211    4217    4283    4342    4347
                        4454    4483    4637    4641    4647    4839#
OCTPE   024650          4472    4476    4502    4504    4506    4508    4510    4512    4514    4516    4518    4520    4837#
                        4913
OCTPE1  024664          4838    4840#
OCTPG   025042          4849    4852    4859    4863    4868    4873    4875    4879#
OCTPGO  025060          4880    4882    4884#
OCTPG1  025064          4844    4885#
OCTP0   024706          4841    4843    4846#
OCTP1   024730          4847    4851#
OCTP2   024736          4850    4853#
OCTP3   025026          4845    4876#
OFL     025104          4837*   4839*   4842    4881    4884*   4890#
OUT     025222          4901    4903    4907    4917#   4934
PAFLG   001030          1765#   2124    2126*   4677
PATRN   001012          1756#   3241*   3244*   3245    3272*   3275*   3276    3302*   3305*   3306    3333*   3336*   3337
,                       3363*   3366    3368*   3382*   3386    3388*   3717    3719    3726    4096    4117    4210    4341
PCNTR   001026          1762#   2005*   2117    2141*
PD0     021356          4257    4263#   4303
PD1     021372          4264    4267#
PD2     021434          4274    4277#
PD3     021440          4276    4278#
PD4     021450          4270    4280#
PD5     021570          4266    4268    4300#
PD6     021614          4305    4307#
PEXFL   000746          1738#   4620*   4632    4657*
PFLG    000676          1718#   4440*   4462*   4487    4529*   4563*   4567    4606*   4611    4616*   4621*   4648*   4652
POST    036254          4253    4389    6009#
PPGEN   022172          3316    4383#
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PPG1	022230	4392#	4394										
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PREFL	001000	1751#	4168*	4273	4304	4307*							
PSCHK	021310	4252#	4376										
PSW	000570	1671#	1909*	2520*	2524*	3889*	3960*						
RBUFF	037010	3739	3782	3797	3805	3982	4091	4175	4261	4318	6055#		
RCDP	001020	1759#	3384*	3389*	3814								
RDAD	000772	1748#	3782*	3797*	3931*	3932*	3934*	3935*	3958				
RDATA	035250	5830#											
RDRVF	001016	1758#	3248*	3422*	3807	3848	3907						
RDSW	025112	4824	4827*	4899#	4929*								
REGP	022776	4477	4499#	4562	4605								
REGS	000614	1681#	1960	1962	1979								
RH17F	001032	1766#	2015*	2021*									
RTRN	000700	1719#	2518*	3953*	4725								
SAV1	000714	1725#	2373*	2378									
SAV2	000716	1726#											
SAV3	000720	1727#											
SCF	000742	1736#											
SCOLP	000722	1728#	2182*	2216*	2242*	2247*	2302*	2336*	2340*	2369*	2376*	2404*	2432*	2463*
		2469*	2475*	2500*	2504*	2508*	2526*	2560*	2590*	2619*	2649*	2663*	2691*	2719*
		2742*	2765*	2822*	2870*	2887*	2910*	2963*	3007*	3024*	3055*	3080*	3087*	3106*
		3112*	3125*	3132*	3147*	3158*	3168*	3190*	3242*	3273*	3303*	3334*	3364*	3383*
		3437*	3490*	3532*	3581*	3627*	3665*	4572*	4669					
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SCOPE1	024056	4666	4668#											
SERFL	001002	1752#	4004*	4023	4031*									
SERNUM	000604	1677#												
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SETO	016372	3821	3824#											
SET1	016376	3823	3825#	3842										
SET2	016432	3829	3831#											
SKAT	001024	1761#	1955*	2140*	2145	2260								
SLAF	000732	1732#												
SLVN	000674	1717#	2038*	2047*	2053*	2054	2056	2268	2281	3026	4705			
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SNPG	025610	4984	4987	4993	4995	4997#								
SNPT	025532	2292	4978#											
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SPO1	016476	3836	3839#											
SP1	016516	3834	3843#											
SP1A	016562	3849	3852#											
SP1B	016602	3844	3851	3854	3856#									
SP3	016652	3862	3864#											
SP4	016672	3865	3868#											
SP5	016706	3869	3871#											
SSCF	000734	1733#												
START	001430	1625	1629	1909#										
STATC	001022	1760#	2000	3697										
STATF	001014	1757#												
STATIC	015634	3432	3489	3530	3579*	3625	3695#							
STATX	015656	3696	3698	3701#										
STFLG	000750	1739#	2011*	2084	2091*	2147	2262	2549	2579	2608	2638	3695	3711	3820
STOP	025634	2082	2139	3841	3870	3981	4027	4164	4423	4486	4566	4610	4651	4697

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STO     001754      1982#   1985
ST1     001776      1988#   1990
ST2     002074      1954    2005#
SUSWR   001502      1920    1922    1929#
SWP     000572      1672#   1932    1936*   1939    2027    2080    2086    2137    2547    2577    2606    2636    3713
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                    4198    4233    4267    4331    4413    4421    4426    4429    4441    4478    4484    4489    4554
                    4564    4569    4597    4608    4613    4622    4642    4649    4654    4665    4682    4900    4912
                    4950*   5023*
SWREG   000176      1618#   1936    1939    4900
TADX    001426      1905#
TC      000542      1654#   2056*   2279*   2353*   2354    2359    2380*   2449*   2490*   2693*   2744*   2768*   2824*
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                    3123    3130    3143*   3144    3150*   3154    3174*   3194*   3439*   3461*   3493*   3534*   3586*
                    3631*   3669*   3674    3856*   3883    3944*   4519    4705*
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TCRLFA  024566      4818#   4821
TEMPST  025106      4897#   4919*   4942*   4943*   4944*   4946*   4950
TEMP1   000704      1721#   2159    2273    2665*   2669    2682*   4750*   4755    4764*
TEMP2   000706      1722#   4399*   4424    4432*
TEMP3   000710      1723#   4579*   4583*   4586*   4603    4713    4969    4972
TEND    002576      2075    2093    2105#
TENDX   002706      2136    2138    2140#
TENDO   002612      2042    2107    2111#
TEX     024646      4810    4828    4832#
TIB     000626      1698#   4753    4758    4761    4771*   4772    4796*   4800*   4803    4904*   4905*   4906    4922*
                    4923    4927    4935    4937    4945*   4946
TINER   024426      4760    4763    4777    4780    4787#
TKB     000576      1674#   4795*   4800    4904
TKS     000574      1673#   2010*   4794*   4797*   4798    4902
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TMS10   034531      2896    5700#
TMS11   034537      5702#
TMS12   034545      5704#
TMS13   034553      5706#
TMS14   034561      3062    5708#
TMS15   034567      5710#
TMS16   034575      5712#
TMS17   034603      2673    5714#
TMS18   034611      5716#
TMS19   034617      2701    5718#
TMS2    034451      5686#
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TMS21   034634      2751    5722#
TMS22   034642      2801    5723#
TMS23   034651      3601    5725#
TMS24   034657      5727#
TMS25   034665      3650    5729#
TMS26   034673      3506    5731#
TMS27   034701      5733#
TMS28   034707      2871    3213    5735#
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TMS3    034457      3182    3203    5688#
TMS30   034722      3208    5738#
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TMS35   035007          3552    5748#
TMS36   035016          3474    5750#
TMS37   035024          3095    5751#
TMS38   035032          3121    5752#
TMS39   035040          3141    5753#
TMS4    034464          5689#
TMS5    034472          5690#
TMS6    034501          3072    5692#
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TMS8    034515          5696#
TMS9    034523          5698#
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TOG     024632          4241    4246    4289    4297    4357    4365    4813    4816    4819    4823    4829#   4830    4877
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TPB     000602          1676#   4803*   4831*   4962*   4964*
TPS     000600          1675#   4801    4829    4958
TREF    000744          1737#
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TR01    000640          1703#
TR02    000642          1704#
TR03    000644          1705#
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TR06    000652          1708#
TR07    000654          1709#
TR10    000656          1710#
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TR14    000666          1714#
TR15    000670          1715#
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TSCDA   002376          2035    2069#
TSCD0   002404          2070#   2085
TSCD1   002440          2074    2076#   2101
TSCD2   002452          2079#   2185    2222    2256    2305    2344    2383    2409    2436    2478    2511    2529    2564
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TSTTBL  001102          1799#   2069    2097
TTIN    024444          4752    4794#   4921
TTINT   024254          1612    4729#
TTIN1   024464          4798#   4799
TTIN2   024500          4801#   4802
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		4639	4645	4696	4710	4712	4788	4808#	4814	4826	4909	4911	4915	4940
		5043												
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TTR1B	024344	4762	4764#											
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TTR3	024412	4776	4778#											
TTR4	024422	4779	4781#											
TTR5	024424	4756	4782#											
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T10AD	001142	1815#												
T101AD	001144	1816#												
T11AD	001146	1817#												
T111AD	001150	1818#												
T12AD	001152	1819#												
T121AD	001154	1820#												
T13AD	001156	1821#												
T131AD	001160	1822#												
T14AD	001162	1823#												
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T15AD	001166	1825#												
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T16AD	001172	1827#												
T161AD	001174	1828#												
T17AD	001176	1829#												
T171AD	001200	1830#												
T2AD	001112	1803#												
T21AD	001114	1804#												
T20AD	001202	1831#												
T201AD	001204	1832#												
T21AD	001206	1833#												
T211AD	001210	1834#												
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T23AD	001216	1837#												
T231AD	001220	1838#												
T24AD	001222	1839#												
T24FL	000754	1741#	2800*	2804*	4465									
T241AD	001224	1840#												
T25AD	001226	1841#												
T251AD	001230	1842#												
T26AD	001232	1843#												
T261AD	001234	1844#												
T27AD	001236	1845#												
T271AD	001240	1846#												
T3AD	001116	1805#												
T31AD	001120	1806#												
T30AD	001242	1847#												
T301AD	001244	1848#												
T31AD	001246	1849#												
T311AD	001250	1850#												

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T32AD   001252          1851#
T321AD  001254          1852#
T33AD   001256          1853#
T331AD  001260          1854#
T34AD   001262          1855#
T341AD  001264          1856#
T35AD   001266          1857#
T351AD  001270          1858#
T36AD   001272          1859#
T361AD  001274          1860#
T37AD   001276          1861#
T371AD  001300          1862#
T4AD    001122          1807#
T41AD   001124          1808#
T40AD   001302          1863#
T401AD  001304          1864#
T41AD   001306          1865#
T411AD  001310          1866#
T42AD   001312          1867#
T43AD   001316          1869#
T44AD   001322          1871#
T45AD   001326          1873#
T46AD   001332          1875#
T47AD   001336          1877#
T5AD    001126          1809#
T51AD   001130          1810#
T50AD   001342          1879#
T51AD   001346          1881#
T52AD   001352          1883#
T53AD   001356          1885#
T54AD   001362          1887#
T55AD   001366          1889#
T56AD   001372          1891#
T57AD   001376          1893#
T571AD  001400          1894#
T6AD    001132          1811#
T61AD   001134          1812#
T60AD   001402          1895#
T601AD  001404          1896#
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T611AD  001410          1898#
T62AD   001412          1899#
T621AD  001414          1900#
T63AD   001416          1901#
T631AD  001420          1902#
T64AD   001422          1903#
T641AD  001424          1904#
T7AD    001136          1813#
T71AD   001140          1814#
UDES    001006          1754#   3240*   3261*   3271*   3291*   3301*   3322*   3332*   3352*   3362*   3381*   3401*   3411*
                        3421*   3812    3828    3853    3856    3891    3896    3912    3929    3955    3987    4059    4064
                        4070    4075    4081    4092    4136    4149
VECT    000612          1680#   1969    1971    1976
WAM     000760          1743#   3778*   3788*   3793*   3803*   3843    3858    3877    3894    3903    4062    4068    4073
                        4079    4094    4138    4147
WAM0    016126          3335    3778#
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WAM01	016134	3779#	3789											
WAM1	016172	3304	3788#											
WAM2	016204	3274	3365	3793#										
WAM2A	016240	3798#												
WAM3	016250	3243	3385	3803#										
WAM3A	016330	3808	3812#											
WAM3B	016346	3813	3815#											
WBUFF	036376	3725	3734	3781	3796	3806	4090	4174	4317	6053#				
WC	000512	1642#	2667*	2771*	2851*	3440*	3462*	3495*	3535*	3583*	3629*	3667*	3831*	4503
WCDP0	001070	1791#	3384	4098										
WCDP2	001056	1786#	3389	4100										
WCS1	001034	1771#	3235*	3256*	3266*	3286*	3296*	3317*	3327*	3347*	3357*	3376*	3396*	3406*
		3416*	4008											
WCS2	001036	1772#	3236*	3257*	3267*	3287*	3297*	3318*	3328*	3348*	3358*	3377*	3397*	3407*
		3417*	4012											
WDATA	035050	2769	3442	3464	3497	3537	3585	3632	3670	5759#				
WDS	001040	1773#	3237*	3258*	3268*	3288*	3298*	3319*	3329*	3349*	3359*	3378*	3398*	3408*
		3418*	4017											
WER	001042	1774#	3238*	3259*	3269*	3289*	3299*	3320*	3330*	3350*	3360*	3379*	3399*	3409*
		3419*	4021											
WMSG16	035644	4113	4206	4337	5925#									
WMSG17	035656	4125	4218	4284	4348	5927#								
WMSG2	035450	3866	5900#											
WMSG20	035663	4129	4224	4292	4360	5928#								
WMSG21	035670	4121	4214	4280	4344	5929#								
WMSG23	035676	4038	5930#											
WMSG24	035712	3977	5932#											
WMSG25	035730	5935#												
WMSG26	035745	5938#												
WMSG27	035764	4467	5941#											
WMSG28	035777	4277	5943#											
WMSG29	036015	4275	5946#											
WMSG3	035466	3715	5903#											
WMSG31	036034	4419	5949#											
WMSG32	036071	4115	4208	4339	5954#									
WMSG4	035507	3837	5906#											
WMSG6	035534	4006	5910#											
WMSG6A	035542	5911#												
WMSG6B	035547	5912#												
WMSG6C	035554	5913#												
WMSG6D	035561	4010	5914#											
WMSG6E	035567	4015	5916#											
WMSG6F	035574	4019	5917#											
WMSG6G	035601	5918#												
WMSG6H	035606	5919#												
WMSG6I	035613	5920#												
WMSG6J	035620	5921#												
WMSG6K	035625	5922#												
WMSG6L	035632	5923#												
WMSG6M	035637	5924#												
WPGFL	001010	1755#	2009*	2083*	3724*	3822								
WSTCK	017572	3996	4004#	4428										
WSTG	017740	4009	4014	4018	4022	4029#								
WSTGO	020006	4035	4040#											
WSTX	020060	4024	4026	4028	4030	4033	4051#							
WTAD	000766	1746#	3806*	3810*	3814*	3845	3850*	3852*	3855*	3905	3909*	3911*	3914*	3915

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                    3917#
W1DCHK  021640      4086    4311    4316#
W1DO    021670      4321    4323#   4379
W1DOA   021706      4327    4329#
W1D1    021714      4325    4331#
W1D2    021772      4334    4343#
W1D2A   022044      4353    4355#
W1D3    022134      4330    4332    4369#
W1D4    022146      4373#   4378
W1D4A   022156      4374    4376#
W1D5    022162      4372    4377#
W2FLG   000774      1749#   4084*   4087*   4133    4157    4320    4326    4352    4373
XDUMPM  000623      1691#   5029*
XXDPM   000621      1689#   2051    5020*   5044
$CNTG   036101      4908    5957#
$ENDAD  002654      1558    2130#
$MNEW   036114      4914    5960#
$MSWR   036105      4910    5958#
$QUEST  036124      4939    5962#
$READ   025224      4916    4919#
$SVPC   = 001000    1543#   1564
        = 037012    1533#   1538    1543    1545#   1549#   1553#   1557#   1560#   1564#   1611#   1617#   1623#   1627#
                    1633#   1638#   5049    5756#   5964#   6054#
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$CHNM0 1574# 2036

. ABS. 037012 000

ERRORS DETECTED: 0

CZTUCF,CZTUCF.SEQ/CRF/SOL/NL:TOC=CZTUCF.P11
RUN-TIME: 5 11 2 SECONDS
RUN-TIME RATIO: 234/19=11.9
CORE USED: 14K (27 PAGES)

DOCUMENT PAGES: 180